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MONTHLY WEATHER REVIEW

JANUARY 1946

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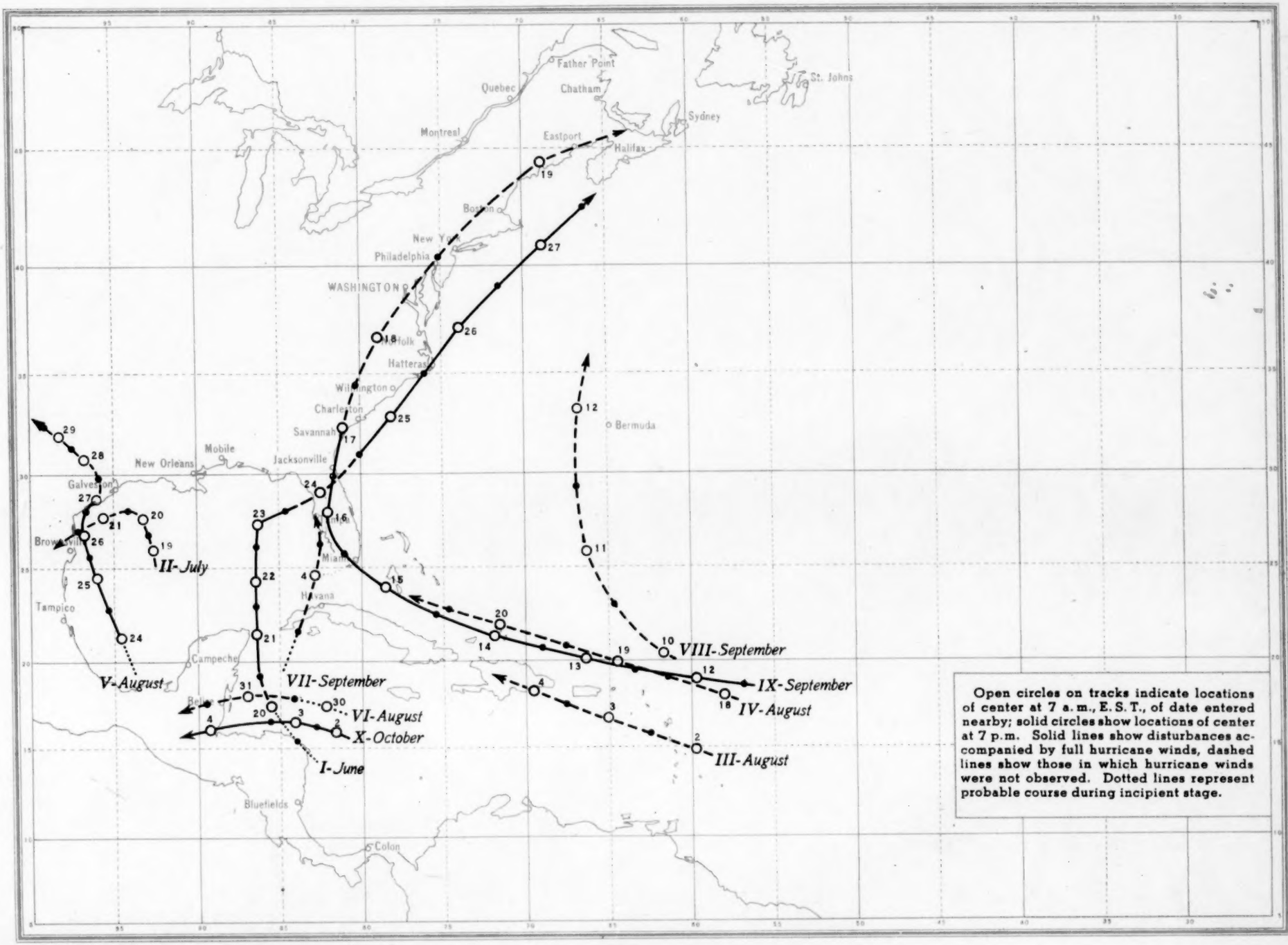
Chart I. Tracks of North Atlantic Hurricanes and Tropical Disturbances of 1945



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NORTH ATLANTIC HURRICANES AND TROPICAL DISTURBANCES OF 1945

By H. C. SUMNER

[Weather Bureau, Washington, D. C., January 1946]

Highlighted by the most remarkable safety record in hurricane forecasting history, the season of 1945 is worthy of evaluation along several lines. New in the records of damage distribution was that of the Florida hurricane of September 11–19, in which over half of the total $60,000,000 property loss was wrought in an area of less than 1 square mile at installations of the Richmond Naval Air Base. Also of interest is the hurricane of early October, which originated in the Caribbean Sea and retained the characteristics of a cyclone as it crossed Mexico and emerged on the Pacific Coast near Acapulco.

The hurricane season of 1945 established a record low mortality rate, never before approached in the annals of hurricane warning service. Three severe hurricanes reached the coast line of the United States, causing property damage in excess of $80,000,000, but only seven lives were lost. Aircraft reconnaissance again played an important role in locating tropical disturbances and determining the strength of their circulations as a basis for predicting storm movement and issuing reliable warnings. Experiments with radar and seismographs, sponsored by the armed forces, indicated that aircraft reconnaissance and regular observational methods will be augmented soon with other valuable observational techniques.

Below are reviews of all North Atlantic hurricanes and tropical disturbances that occurred during the season of 1945. A synopsis of the important features of these storms is given in Table 4, and their tracks, numbered I to X chronologically, are plotted on Chart I.

I. *Hurricane of June 20–27.*—The first tropical storm of the 1945 season formed in the western Caribbean Sea between Swan Island and the coast of Honduras during the night of June 19. A definite circulation was observed on the 20th when the disturbance was about 100 miles west-northwest of Swan Island. From this location the storm, attended by moderate gales and squalls, moved through the Yucatan Channel and Gulf of Mexico to the vicinity of latitude 27.5° N., longitude 86.5° W., where it turned sharply northeastward and developed winds of full hurricane force as it approached the Florida coast. The crew of a reconnaissance plane which flew into the storm about 120 miles south of Apalachicola on the afternoon of the 23d, estimated winds of 100 knots at two observation points near the center. The storm diminished in intensity as it reached the west coast of Florida and passed inland between Brooksville and Dunnellon at about 4:00 a. m., June 24. The circulation remained intact as the storm crossed the peninsula, attended by exceptionally heavy rains and winds of 45 to 55 miles per hour, moving into the Atlantic about noon of the 24th, between Daytona Beach and St. Augustine, Fla. Over the Atlantic it regained hurricane intensity, as indicated by reports of winds reaching 70 miles per hour at Tybee Island and Paris Island, while the center was moving northeastward some 60 miles offshore. It again lost force as it approached the North Carolina Capes, where the center passed over or very near Cape Hatteras about midnight of the 25th, accompanied by winds of about 50 miles per hour. Indications are, that, for the third time, the storm regained hurricane intensity as it moved northeastward over the open waters of the North Atlantic. The storm center reached a position south of Nova Scotia on the 27th, and thereafter weakened and disappeared.

Damage from this storm was not heavy, and no deaths or serious injuries were reported. Communications were disrupted over small areas, and there was some damage to crops and buildings resulting from excessive rains and flooding. A 24-hour rainfall of 10.42 inches at Tampa broke all previous records at that station. In most areas passage of the storm was more beneficial than damaging, as the heavy rains which accompanied it broke a 12-month drought which had become one of the worst in Florida's history.

II. *Weak tropical disturbance of July 19–21.*—This slight disturbance formed in the western Gulf of Mexico from a wave in the easterlies, and, through reconnaissance flights, a complete circulation was verified on July 19. Pilot balloon reports from stations along the coast later indicated that the circulation existed to at least 15,000 feet and probably extended to 20,000 feet. Despite this deep circulation, the disturbance remained weak throughout its 3-day history, and it is not likely that gales over 45 to 50 miles per hour were associated with it at the time of its greatest development. Occasional squalls and rough seas were encountered along the coast from Grande Isle, La., to Port Aransas, Tex., but by the time the center moved inland, the storm had dissipated to such an extent that only fresh winds and a few scattered squalls were reported.

III. *Tropical disturbance of August 2–4.*—This disturbance appeared east of the Lesser Antilles on August 1, moved west-northwestward between the islands of Guadeloupe and Dominica on the 2d, and during the 3d passed south of Puerto Rico. It crossed the southern coast line of the Dominican Republic west of Ciudad Trujillo on the 4th and dissipated as it moved inland. No winds over Beaufort force 9 (47 to 54 miles per hour) accompanied the storm at any stage.

IV. *Tropical disturbance of August 17–21.*—When first detected by aircraft reconnaissance on August 17, this storm was centered near latitude 17°–18° N., longitude 53°–54° W., and showed a circulation with highest winds of Beaufort force 7 to 8 (32 to 54 miles per hour). It reached its greatest development on August 18, when reconnaissance reported winds of 65 knots in the vicinity of latitude 19° N., longitude 61° W. From this point it

began to lose intensity as it continued on a west-northwest course, and, by the morning of the 20th, when the center reached the vicinity of Turks Island, the highest winds were only 35 to 40 miles per hour. Dissipation took place over the ocean between Cuba and the Bahama Islands during the night of August 20–21.

V. *Texas hurricane of August 24–29.*—During the period of August 25–29, the coastal area of Texas was lashed by one of the most intense hurricanes in Texas history. Damage at Corpus Christi and in other areas along the south coast was the heaviest since the destructive September storm of 1933. While the area affected by hurricane winds and gales associated with this storm was only moderate in size, records show that no hurricane of such intensity ever paralleled the coast of Texas for so great a distance. Fully two-thirds of the Texas coast and offshore islands were subjected to winds of full hurricane force.

The storm formed in an area of squalls which had persisted for several days over the Gulf of Campeche, near latitude 21.5° N., longitude 95° W. It rapidly developed into a hurricane during the morning of August 24 and began a northward movement at a rate of 8 to 10 miles per hour. This rate of forward movement continued during the 24th and 25th, but as the storm neared the coast on the 26th, the speed of translation dropped to about 5 miles per hour, a rate which was maintained until the center moved inland near Port Aransas. At this station a 20-minute lull in the wind between 1 a. m. and 2 a. m. on the 27th indicated passage of the calm "eye" of the storm. On the 27th the center also passed a short distance south of Seadrift, Tex., at about 10 a. m., and slightly north of Port O'Connor about 11 a. m. Neither place experienced a calm, although they are only 19 miles apart. Continuing a northeastward movement parallel to the coast, the storm began to recurve toward the northwest as it passed west of Matagorda and dissipated in the interior of Texas on the 29th.

Winds accompanying the storm were estimated as high as 135 miles per hour at Seadrift, Port O'Connor, and Port Lavaca. The lowest reliable barometer reading was recorded at Camp Hulen, Palacios, Tex., on August 27 about 3 p. m. It was 28.57 inches (967.5 millibars), only 0.02 inch higher than the low reported for Galveston in the disastrous hurricane of September 8, 1900. Other readings of 28.00 and 28.10 were reported but were believed doubtful. The slow forward movement of the storm center built up high tides, reaching as high as 15.0 feet at Port Lavaca on Lavaca Bay. Slow progression accounted also for excessive precipitation along the coast and for a considerable distance inland. At Houston, for instance, 9.39 inches fell in a 6-hour period ending at 2:30 a. m., August 28. Rainfall along the coast, estimated as high as 30 inches, added to the flooding and damage caused by the wind-impounded waters of the Gulf.

Three deaths were attributed directly to the hurricane: two men were drowned at Port Isabel when their small boat crashed into the jetties, and one person was killed about eight miles north-northeast of Houston in a small tornado that developed in the storm circulation on August 27. Prevention of loss of life was made possible by the evacuation of thousands of persons from low-lying areas and from buildings not expected to survive the destructive winds. Buildings were boarded up and other precautionary measures were taken before damaging winds reached the coast.

Heavy damage occurred to real estate, roads, bridges, boats, and oil field equipment in Nueces, San Patricio, Aransas, Calhoun, Matagorda, and Wharton Counties, while severe crop and livestock losses were sustained in practically all middle and upper coast areas. Total damage to real property was estimated at $5,883,000, while damage to crops, principally cotton, rice, and corn, amounted to about $14,000,000. Cattle and poultry losses were estimated at an additional $250,000.

Table 1 contains significant data on winds and pressures in this storm for selected stations.

TABLE 1.—*Meteorological data for Texas hurricane of August 24–29, 1945*

[All times eastern standard]

Station	Date of observation	Lowest pressure (inches)	Time of lowest pressure	Highest wind velocity	Direction of highest wind	Time of maximum velocity	Highest tide (feet)[1]
Brownsville	26	29.51	1:15 a. m.	[2] 40		1:00 a. m.	
Corpus Christi (WBAS)	26	29.50	6:15 p. m.	[2] 56	N	7:40 p. m.	
Corpus Christi (WBO)	26	29.48	7:45 p. m.	[2] 67	N	11:00 p. m.	4.5
Pt. Aransas	27	29.02		[3] 125	NE–NW	1–3:00 a. m.	4.0
Aransas Pass	27	29.27	3:00 a. m.	[3] 125	N–NW		4.5
Rockport	27	29.21	5:00 a. m.	[3] 90–100	NW	3:30 a. m.	.5
Austwell	27	28.98	7:00 a. m.	[3] 120	N		4.0
Seadrift	27	29.10		[3] 135	NW		1.0
Port Lavaca	27	28.92	12:35 p. m.	[3] 135			15.0
Olivia	27			[3] 135		1:00 p. m.	
Port O'Connor	27	28.60		[4] 105	E–W	1:30–3:30 p. m.	
Palacios	27	28.57	3:00 p. m.	[3] 125	NE–E	2–4:00 p. m.	8.0
Collegeport	27	28.75	4:30 p. m.	[3] 135		4:00 p. m.	
Buckeye	27	29.09	5:00 p. m.	[2] 90		4:00 p. m.	
Matagorda	27	29.04	6:00 p. m.	[3] 120	S–SW	5–10:00 p. m.	8.0
Wadsworth	27			[3] 125	SE	5–7:00 p. m.	
Blessing	27	29.04	5:10 p. m.	[2] 90	NE	5:00 p. m.	
Bay City	27	28.84	9–10:00 p. m.	[3] 85–100	E–SE		
Freeport	27	29.55	9:00 p. m.	[3] 64–66	SE	9–12:00 p. m.	5.6
Galveston	27	29.70	8:40 p. m.	[3] 45			
Lissie	27			[3] 75		11:00 p. m.	
New Ulm	28			[3] 60		4:00 a. m.	
Ledbetter	28			[3] 60		5:15 a. m.	

[1] Height above mean low tide.
[2] 5-minute maximum velocity.
[3] Estimated gust velocities.
[4] Anemometer cups blown away by wind registering 105 miles per hour.

VI. *Tropical disturbance of August 30–31.*—This disturbance formed in the Caribbean Sea east of Belize on the 30th and moved westward into British Honduras. Belize, over which the center passed on the 31st, reported an almost complete calm at 12:30 p. m. and a low pressure of 29.33 inches at 2:30 p. m. Winds of hurricane force did not accompany this storm at the surface, but it is believed that velocities of about 60 miles per hour marked its entire course. Actual wind damage was slight, but excessive rains and high tides resulted in flooding portions of Belize 2 to 3 feet.

VII. *Minor tropical disturbance of September 3–4.*—A slight disturbance moved northward out of the Caribbean Sea, across western Cuba and into the Florida Peninsula near Fort Myers during September 3–4. The lowest pressure reported was 29.77 inches, and circulation about the center was not strong. However, squalls of a tropical character, with winds reaching 40 miles per hour and gusts to 50 miles per hour, prevailed among the Keys and along the southeast Florida coast northward beyond Miami. The only damage reported was to small boats in Miami harbors.

VIII. *Disturbance of September 9–12.*—A slight disturbance was located east of the Leeward Islands on the 9th of September. It moved northwestward during the 10th, turned to northward along the 67th meridian on the 11th, and began to dissipate as it passed about 100 miles west of Bermuda on the 12th. This storm did not develop a well-defined circulation, although at the time it was centered northeast of the Leeward Islands reports from reconnaissance planes indicated winds of 60 miles per hour.

IX. *Severe Florida hurricane of September 11–19.*—This

storm, which totally destroyed the three lighter-than-air hangars at the Naval Air Station, Richmond, Fla., was, from the standpoint of property damage, the most destructive hurricane of the 1945 season.

It was first noted east of the Leeward Islands on September 11, and moving west-northwestward, passed north of Puerto Rico during the morning of the 13th and very near Turks Island on the night of the 13–14th. It began a gradual curvature to the northwest while passing over the Great Bahama Bank during the night of the 14–15th, and struck inland on the south Florida coast over the northern end of Key Largo about 3:30 p. m. on September 15. Moving inland, the center passed almost directly over the Homestead Army Air Base. After leaving the cities of the south coast, the hurricane traversed the swamplands of the Everglades for about 150 miles. La Belle, on Lake Okeechobee, was the only town to feel the full force of the winds in this area. Reports indicate that every house in town was damaged. By the time the center reached the rich citrus belt of Florida the central pressure had filled approximately an inch, and winds had dropped to velocities only slightly in excess of 75 miles per hour, an intensity which was apparently maintained until the center reached the Atlantic, near St. Augustine, about 10 p. m. of the 16th. Skirting the Georgia coast, the center again moved inland on the South Carolina coast near Paris Island, where winds of 80 to 90 miles per hour were reported. As the storm began to lose force over the Carolinas, excessive rains caused considerable flooding, with resultant crop losses running into millions of dollars. Serious floods occurred along the Pee Dee and Cape Fear Rivers, with stages on the Pee Dee reaching the highest of record. The storm was traced as far north as Nova Scotia, where it dissipated on the 19th.

When the center of the storm passed almost directly over the Homestead Army Air Base, the station experienced a 50-minute calm and a barometer reading of 28.09 inches (951.2 millibars) at 4:55 p. m. on the 15th. Two hours earlier Carysfort Light reported a 20-minute lull and a barometer reading of 28.15 inches (953.3 millibars). The highest measured wind velocity observed during the hurricane was 138 miles per hour from the southwest at Carysfort Reef Light, located a few miles west of the point where the center reached the coast and opposite in direction from the center of the storm where the highest velocities are usually recorded. Turks Island reported gusts reaching 150 miles per hour. At Homestead Army Air Base, after instruments had failed, winds were estimated at 125 to 130 miles per hour, with gusts of 150 miles per hour. An extensive survey by structural engineers of wind damage to hangars of the Richmond Naval Air Base, and of permanent displacement and dishing of the steel-framed door leaves of these hangars, established similar estimates of wind force.[1]

Table 2 contains significant data on winds and pressures in this storm for selected stations.

[1] Joint Report on "Investigation of Destruction During Hurricane of Three Lighter-Than-Air Hangars of the U. S. Naval Air Station, Richmond, Fla.," presented at the 30th Annual Meeting of the Building Officials Conference of America.

TABLE 2.—*Meteorological data for the Florida hurricane of Sept. 12–19, 1945*

[All times eastern standard]

Station	Date of observation	Lowest pressure	Time of lowest pressure	Maximum wind velocity and direction for a 5-minute period	Time of maximum velocity	Extreme wind velocity and direction (fastest mile from register)	Time of extreme velocity	Velocity of extreme gust
Turks Island	14	28.84	1:30 a. m.					[1] 150
Clarence Town, Bahama Islands	14	29.56	3:00 p. m.			105		
Georgetown, Bahama Islands	14					75		
Alligator Light	15	29.47	2:30 p. m.	60 NW	3:14 p. m.	70 NW	3:14 p. m.	
Carysfort Reef Light	15	28.15	3:00 p. m.	123 SW	3:36 p. m.	138 SW	3:37 p. m.	
Tavernier, Fla.	15	29.31				90 NNW		
Homestead, Fla. (Army)	15	28.09	4:55 p. m.	[1] 130 SSW	5:15 p. m.			[1] 150
Richmond, Fla. (Navy)	15	28.14	5:45 p. m.			109		140
Miami, Fla. (WBO)	15	29.17	5:14 p. m.	86 SE	5:36 p. m.	107 SE	5:36 p. m.	
Miami, Fla. (WBAS)	15	29.16	6:05 p. m.			94 ESE	6:04 p. m.	107
Opa Locka, Fla. (Navy)	15	29.26	6:00 p. m.					100
Hillsboro Light	15	29.55	7:30 p. m.	83 E	7:30 p. m.	85 E	7:32 p. m.	
Belle Glade, Fla. (USE)	15	29.51	10:27 p. m.	62 ENE	10:35 p. m.	75 ENE	10:35 p. m.	79
Clewiston, Fla. (USE)	15	29.42	11:00 p. m.	64 ENE	10:30 p. m.	75 E	11:43 p. m.	83
Everglades, Fla.	15	29.52	11:30 p. m.	22 W	9:30 p. m.			
Naples, Fla.	16	29.46	1:00 a. m.	48 SSW	1:27 a. m.	60 SSW		
Fort Myers, Fla. (Army)	16	29.09	1:00 a. m.	55 NW	1:34 a. m.			79
Fort Myers, Fla. (WBO)	16	29.29	2:30 a. m.	55 NW	2:05 a. m.	57 NW	2:08 a. m.	68
Moore Haven, Fla. (USE)	16	29.30	2:00 a. m.	52 E	2:30 a. m.	80 E	2:30 a. m.	
West Palm Beach, Fla.	16	29.62	1:45 a. m.					82
Jupiter Light	16	29.67	2:00 a. m.	60 E	12:45 a. m.	62 E	12:45 a. m.	
Gasparilla Light	16	29.40	4:00 a. m.	42 WSW				
Egmont Key Light	16	29.62	8:15 a. m.	48 N	5:04 a. m.	52 N	5:04 a. m.	
Lakeland, Fla. (WBAS)	16	29.33	10:50 a. m.			66 NNE	10:50 a. m.	
Lakeland, Fla. (WBO)	16	29.33	11:20 a. m.	32 NE	7:31 a. m.	34 NE	7:30 a. m.	
Tampa, Fla.	16	29.55	11:30 a. m.	35 N	5:35 a. m.	40 NNE	6:15 a. m.	50
Anclote Light	16	29.61	1:45 p. m.	44 N	7:56 a. m.	51 N	7:59 a. m.	
Orlando, Fla.	16	29.29	2:28 p. m.			66 SE	1:28 p. m.	78
Melbourne, Fla.	16	29.54	2:45 p. m.	55 SE	12:50 p. m.	69 SE	12:50 p. m.	72
Sanford, Fla. (NAS)	16	29.29	3:45 p. m.	48 NE	2:24 p. m.	55 NE	2:26 p. m.	77
De Land, Fla. (NAS)	16	29.24	4:00 p. m.	38 NE	12:55 p. m.	44 NNE	12:55 p. m.	55
Dunnellon, Fla.	16	29.58	4:00 p. m.			35 NNE	1:15 p. m.	45
Cape Canaveral Light, Fla.	16	29.53	5:00 p. m.	69 S	1:34 p. m.	75 S	1:34 p. m.	
Cedar Keys, Fla.	16	29.67	5:30 p. m.			35 NE	1:15 p. m.	45
Daytona Beach, Fla.	16	29.27	5:25 p. m.			68 ESE	3:18 p. m.	
Ponce de Leon Light	16	29.27	4:30 p. m.	80 S	3:02 p. m.	90 S	3:02 p. m.	
St. Augustine Light	16			76 NNE	6:12 p. m.	81 NNE	6:13 p. m.	
Jacksonville, Fla. (NAS)	16	29.37	10:59 p. m.	55 N	8:10 p. m.	67 N	8:14 p. m.	78
Jacksonville, Fla. (WBO)	16	29.42	11:29 p. m.	37 NE	8:25 p. m.	42 N	10:05 p. m.	
Jacksonville, Fla. (WBAS)	16	29.39				44 NNE	8:27 p. m.	60
Jacksonville Beach, Fla.	16	29.22	11:40 p. m.			60 E	9:35 p. m.	
Fernandina, Fla.	17	29.36	12:25 a. m.			60 NE		
Brunswick, Ga.	17	29.38				54 NNE		63
Savannah, Ga.	17	29.39	6:45 a. m.	36 N	1:17 a. m.	39 N	1:19 a. m.	50
Paris Island, S. C.	17	29.29	6:45 a. m.			85 E		90
Charleston, S. C. (WBO)	17	29.47	9:45 a. m.	57 E	4:43 a. m.	65 E	2:26 a. m.	
Charleston, S. C. (WBAS)	17	29.47	12:10 p. m.			40 ENE	4:40 a. m.	70
Wilmington, N. C.	17	29.77	2:30 p. m.	32 SSE	1:08 p. m.	37 SSE	1:08 p. m.	48
Norfolk, Va.	18	29.94	4:00 a. m.	29 E	4:46 p. m.	34 E	4:49 p. m.	
Richmond, Va.	18	29.95	7:17 a. m.	24 NE	10:36 a. m.	27 NE	10:36 a. m.	

[1] Estimated.

Loss of life was prevented through evacuation by the Red Cross and other agencies of approximately 50,000 persons who would have been in dangerous locations along exposed beaches and tidal creeks. Four people were killed in Florida, among them the Chief of the fire department at the Richmond Air Base. Incomplete reports indicate that 22 deaths occurred in the Bahamas, largely in the Caicos Group of islands west of Turks Island.

Property damage was estimated at $60,000,000, of which over $50,000,000 was listed for Dade County, Fla. The path of greatest destruction was about 40 miles in width, including the towns of Perrine, Goulds, Princeton, Florida City, Homestead, Richmond, Redland, and South Miami. The city of Miami, although it experienced an extreme wind of 107 miles per hour, lay outside the zone of greatest destruction and did not suffer the severe damage wrought in neighboring communities to the south.

The following estimated figures on property damage and casualties resulting from the September hurricane were secured from reliable sources by the Weather Bureau.

TABLE 3.—*Damage and casualties in Florida*

Houses destroyed	1,632
Houses damaged	5,372
Number of persons killed	4
Number of persons injured	43
Cattle killed	400
Poultry killed	7,000
ESTIMATED LOSSES	
Property damage	$40,000,000
Crop loss	10,000,000
Power and communications	1,000,000
Ornamental trees, shrubs, and timber	2,000,000
Small boats, piers, docks, seawalls, etc	1,000,000
Highways and bridges	100,000
Livestock	15,000
Total	$54,115,000

The greatest single loss came in the total destruction of three lighter-than-air hangars at the Richmond Air Base. The huge structures, each 1,060 feet long, 300 feet wide, and over 180 feet high, began to disintegrate under the high winds, and almost immediately sparks created by falling roof members ignited high octane gas. Thousands of gallons burned furiously in each hangar; temperatures estimated to exceed 2,000° F., quickly consumed 25 blimps, 366 airplanes, and 150 automobiles in the three structures.

X. *Hurricane of October 2–4.*—The only disturbance of tropical character charted during October 1945 was first detected in the western Caribbean near latitude 16° N., longitude 81°–82° W., on October 2. From this position the storm moved west-northwestward and passed about 50 miles south of Swan Island. Light sea swells, indicating a disturbance in the vicinity, were first noted during the afternoon of October 1. They increased in magnitude during the night and following morning, and by noon of the following day were very distinct, having a frequency of 7 per minute. Later the frequency dropped to 6 per minute at 4 p. m., and 5 per minute on the following morning, an indication that the storm was of considerable intensity. A plane on reconnaissance came on the storm while it was centered south of Swan Island, and the crew estimated winds at 85 knots (98 miles per hour) with a central pressure near 29.00 inches.

At Swan Island a maximum wind of 39 miles per hour from the east (extreme, 44 miles per hour), was experienced at 8:45 a. m., on the 3d, with occasional gusts at 60 miles per hour; the pressure was 29.57 inches at 5:10 a. m., on that date. Hundreds of coconut palms were uprooted on the island, and practically all banana trees were blown over. Other damage was slight.

Moving westward, the hurricane struck inland about 8 a. m., August 4, 60 to 80 miles south of Belize. Press reports indicate that three-fourths of the houses in Punta Gorda were flattened and that 40 houses were destroyed at Livingston on the Guatemala coast. Many were injured in towns along the coast, and one death was reported.

After passing inland the storm continued a westward course and lost force over Guatemala and Mexico. Reports indicate that a center, accompanied by heavy rain, was recognizable as far west as Acapulco on October 5, marking this hurricane as one of the rare tropical storms that have succeeded in maintaining a circulation as they passed from one ocean to another over Central America and Mexico.

Although there are several instances of North Pacific hurricanes traveling eastward across the Isthmus of Tehuantepec and entering the Gulf of Mexico, there is apparently only one other account of a tropical storm passing westward from the Caribbean Sea into the Pacific Ocean. This was the storm of September 19–October 8, 1921, which moved from the western part of the Caribbean into the Pacific Ocean, and then across the United States and the Atlantic Ocean to a point west of the British Isles. This complete track, covering a distance of approximately 7,000 miles, is the longest of any Mexican typhoon plotted. A complete account is carried on the reverse side of the North Pacific Pilot Chart for August 1944.

TABLE 4.—*North Atlantic hurricanes and tropical disturbances of 1945*

[Number of storm in table corresponds to number of path on Chart I]

Storm	Date	Area where first reported	Coast lines crossed	Maximum wind velocity reported	Lowest pressure reported [1]	Place of dissipation	Intensity	Remarks
I	June 20–27	100 miles west-northwest of Swan Island.	Florida	115 miles per hour estimated from reconnaissance plane 120 miles south of Apalachicola.	988.5 millibars (29.19 inches) at Hatteras, N. C.	South of Nova Scotia.	Hurricane intensity over the Gulf of Mexico and Atlantic Ocean.	No loss of life or heavy property damage reported. Excessive rains, breaking 24-hour records at several stations, were more beneficial than harmful as they broke one of Florida's worst droughts.
II	July 19–21	300 miles east of Brownsville, Tex.	Texas	No data	No data	Texas coast south of Corpus Christi.	Weak disturbance	Occasional squalls and rough seas reported from Grand Isle, La., to Port Aransas, Tex.
III	Aug. 1–4	East of the Lesser Antilles.	Dominican Republic.	Beaufort force 9 (47–54 miles per hour) from a ship.	do	Southern portion of Dominican Republic.	Not of hurricane intensity.	No damage reported.
IV	Aug. 17–21	Near latitude 17°–18° N., longitude 53°–54° W.	None	65 knots (75 miles per hour) estimated from reconnaissance plane near latitude 19° N., longitude 61° W.	do	Over the ocean between Cuba and Bahama Islands.	Near hurricane intensity on Aug. 18.	Reports from islands indicate that no damage resulted from this storm.
V	Aug. 24–29	Bay of Campeche	Texas	105 miles per hour at Port O'Connor, Tex.[2]	967.5 millibars (28.57 inches) at Camp Hulen, Palacios, Tex.	Interior of Texas	Full hurricane	One of the most intense hurricanes ever experienced on the Texas coast. Only three lives were lost, but property damage estimated in excess of $20,000,000.
VI	Aug. 30–31	East of Belize	British Honduras.	60 miles per hour reported from airplane east of Belize.	989.8 millibars (29.23 inches) at Belize.	Interior of British Honduras.	Not of hurricane intensity.	At Belize water overran the sea wall and flooded portions of the city to depths ranging from 2 to 3 feet. Considerable damage to crops and shipping.
VII	Sept. 3–4	Northwestern Caribbean Sea.	Florida	40 miles per hour and gusts of 50 miles per hour along the Keys and south Florida coast.	1,008.0 millibars (29.77 inches) in Florida Keys.	Southern Florida	Minor disturbance	Slight damage to small boats in Miami harbors.
VIII	Sept. 9–12	East of Leeward Islands.	None	60 miles per hour estimated from reconnaissance plane northeast of Leeward Islands.	No data	Atlantic Ocean west of Bermuda.	Not of hurricane intensity.	No damage to shipping has been reported.
IX	Sept. 11–19	do	Florida	138 miles per hour from the southwest at Carysfort Reef Light.	951.2 millibars (28.09 inches) at Homestead Army Air Base, Homestead, Fla.	North of Nova Scotia.	Intense hurricane.	Most severe hurricane of the season. A total of 26 lives lost, 4 in Florida and 22 in the Bahamas. Total damage estimated at about $60,000,000.
X	Oct. 2–4	Near latitude 16° N., longitude 81°–82° W.	British Honduras and Guatemala.	85 knots (98 miles per hour) estimated from reconnaissance plane south of Swan Island.	982.1 millibars (29.00 inches) estimated from plane south of Island.	Near Acapulco, Mexico.	Full hurricane	Great destruction on coast of Central America near the British Honduras-Guatemala line.

[1] Reduced to sea level.

[2] Cups torn from anemometer by winds registering a velocity of 105 miles per hour.

METEOROLOGICAL AND CLIMATOLOGICAL DATA FOR JANUARY 1946

CHANGE IN SUMMARIZATION OF RADIOSONDE DATA

Effective January 1, 1946, all tabulations of radiosonde data are based on constant pressures rather than on standard heights as heretofore. Geometric height has been replaced by dynamic height (geopotential); dynamic height in units of 0.98 gdm. is numerically equal to geometric height in meters, if the acceleration of gravity is 980 cm^2/sec^2.

In Table 1 mean monthly values are given, insofar as they are available, for standard pressure surfaces. Where the standard pressures are greater than the station pressures, the values of the dynamic height, on which the means are based, are calculated by extrapolation. Values of temperatures and relative humidity for these standard pressures are not recorded. At some stations, standard pressures will be greater than the station pressures on some days and less on others, and hence the values of temperature and relative humidity will be recorded only part of the time. Monthly mean values of temperature and relative humidity are not computed for a standard pressure if the data are missing for more than 3 days due to fluctuation of the constant pressure surface, above and below ground. The high correlation of temperature and relative humidity with pressure would otherwise result in biased means.

In the accompanying Charts, VIII, IX, X, and XI, contour lines show the dynamic heights of the four constant pressure surfaces of 850, 700, 500, and 300 millibars. The resultant wind arrows shown on the charts are, however, based on standard height levels of 1,500, 3,000, 5,000, and 10,000 meters respectively, as heretofore.

AEROLOGICAL OBSERVATIONS

TABLE 1.—*Mean dynamic height (geopotential) in units of 0.98 dynamic meter, temperature in degrees centigrade, and relative humidity in percent, for standard pressures, as obtained by radiosondes during January 1946*

STATIONS AND MEAN SURFACE PRESSURES

Standard pressure surface (mb.)	Albany, N. Y. (1,006.7 mb.)				Albuquerque, N. Mex. (838.4 mb.)				Apalachicola, Fla. (1,020.4 mb.)				Atlanta, Ga. (986.0 mb.)				Big Spring, Tex. (928.9 mb.)				Bismarck, N. Dak. (954.6 mb.)				Boise, Idaho (922.1 mb.)			
	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity
Surface	31	93	−4.3	73	30	1,620	0.8	57	31	5	12.2	84	31	300	6.0	75	31	774	4.1	73	31	505	−11.0	84	31	868	−2.1	83
1,000	31	144	(*)	----	30	176	(*)	----	31	174	12.9	77	31	183	(*)	----	31	164	(*)	----	31	143	(*)	----	31	215	(*)	----
950	31	548	−5.8	74	30	600	(*)	----	31	606	11.8	69	31	608	6.1	69	31	589	(*)	----	31	543	(*)	----	31	631	(*)	----
900	31	970	−7.3	76	30	1,043	(*)	----	31	1,056	10.0	67	31	1,047	5.6	66	31	1,031	5.0	63	31	961	−6.3	73	31	1,061	−0.2	74
850	31	1,414	−8.7	72	30	1,508	(*)	----	31	1,530	8.7	52	31	1,514	5.0	61	31	1,497	4.1	54	31	1,406	−6.0	60	31	1,517	−2.2	68
800	31	1,883	−9.5	67	30	1,997	0.4	52	31	2,030	7.0	44	31	2,008	3.8	58	31	1,989	3.0	49	31	1,882	−7.2	57	31	1,997	−4.0	64
750	31	2,385	−10.4	59	30	2,514	−2.4	53	31	2,563	5.1	37	31	2,536	1.4	57	31	2,515	0.6	50	31	2,388	−9.7	56	31	2,511	−6.3	60
700	31	2,910	−12.1	60	30	3,057	−5.3	52	31	3,117	2.1	36	30	3,082	−1.3	50	31	3,061	−2.3	51	31	2,913	−12.4	53	31	3,042	−8.6	52
650	31	3,479	−14.3	58	30	3,637	−7.9	48	30	3,715	−0.7	----	29	3,672	−4.1	----	31	3,650	−5.5	43	31	3,480	−15.5	53	31	3,620	−11.7	52
600	31	4,077	−17.4	57	30	4,254	−11.7	51	30	4,349	−4.1	----	29	4,296	−7.7	----	31	4,270	−9.5	41	31	4,076	−18.9	52	31	4,223	−15.3	51
550	30	4,725	−21.2	----	30	4,914	−15.9	50	30	5,029	−8.4	----	29	4,968	−11.6	----	31	4,936	−13.8	42	31	4,719	−21.1	----	31	4,878	−19.3	55
500	30	5,422	−25.8	----	30	5,628	−20.8	----	30	5,761	−13.3	----	29	5,692	−16.5	----	31	5,655	−18.6	----	31	5,412	−27.4	----	30	5,577	−24.2	----
450	30	6,185	−30.6	----	30	6,401	−26.0	----	30	6,562	−18.6	----	29	6,483	−21.9	----	30	6,440	−23.9	----	31	6,167	−32.9	----	29	6,351	−29.3	----
400	30	7,006	−36.1	----	30	7,241	−32.4	----	30	7,423	−24.5	----	29	7,332	−28.2	----	29	7,281	−30.3	----	31	6,982	−36.1	----	29	7,179	−35.5	----
350	30	7,920	−42.4	----	30	8,169	−39.4	----	29	8,385	−31.5	----	27	8,264	−35.1	----	27	8,231	−36.9	----	31	7,885	−45.5	----	28	8,091	−42.3	----
300	30	8,947	−48.2	----	30	9,208	−46.3	----	29	9,457	−40.1	----	25	9,323	−42.2	----	27	9,284	−43.2	----	30	8,901	−52.1	----	27	9,130	−49.1	----
250	27	10,151	−52.6	----	30	10,403	−51.8	----	29	10,675	−49.4	----	25	10,535	−49.7	----	25	10,489	−49.5	----	25	10,087	−57.1	----	23	10,319	−55.1	----
200	17	11,625	−55.4	----	28	11,835	−53.7	----	29	12,106	−58.2	----	22	11,973	−55.8	----	24	11,932	−52.5	----	14	11,501	−53.0	----	19	11,739	−57.2	----
175	13	12,497	−56.1	----	24	12,670	−54.7	----	25	12,936	−60.8	----	19	12,814	−57.1	----	21	12,802	−54.9	----	9	12,344	−51.7	----	13	12,555	−54.0	----
150	12	13,473	−56.5	----	21	13,644	−56.5	----	17	13,895	−63.0	----	13	13,786	−57.9	----	17	13,777	−57.6	----	8	13,337	−50.8	----	8	13,516	−54.5	----
125	----	----	----	----	15	14,794	−59.8	----	11	14,995	−66.2	----	8	14,913	−59.9	----	7	14,923	−60.6	----	6	14,502	−51.4	----	6	14,699	−56.5	----
100	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	5	16,284	−63.5	----	----	----	----	----	----	----	----	----

	Brownsville, Tex. (1,017.1 mb.)				Buffalo, N. Y. (990.4 mb.)				Burrwood, La. (1,020.0 mb.)				Caribou, Maine (990.7 mb.)				Charleston, S. C. (1,020.7 mb.)				Ciudad Victoria, Mexico (976.8 mb.)				Clovis, N. Mex. (868.3 mb.)			
Surface	31	6	13.6	86	31	221	−2.6	75	30	2	12.8	87	31	191	−12.6	90	30	* 10	8.4	83	28	335	16.8	63	31	1,306	0.6	65
1,000	31	148	14.0	82	31	143	(*)	----	30	168	13.4	82	31	121	(*)	----	30	184	9.4	78	28	131	(*)	----	31	150	(*)	----
950	31	586	13.0	77	31	555	−4.1	75	30	604	11.2	82	31	512	−12.9	87	30	610	8.6	70	28	573	16.3	63	31	576	(*)	----
900	31	1,034	11.8	68	31	974	−5.9	76	30	1,051	10.8	70	31	921	−13.7	83	30	1,056	7.6	66	28	1,029	14.3	65	31	1,017	(*)	----
850	31	1,512	11.0	63	31	1,420	−7.9	74	30	1,524	9.7	59	31	1,355	−13.6	79	30	1,526	6.0	58	28	1,510	12.0	66	31	1,477	2.6	55
800	31	2,018	10.0	52	31	1,891	−8.8	63	30	2,030	8.1	55	31	1,815	−14.8	76	30	2,021	4.8	52	28	2,018	11.1	61	31	1,967	1.6	46
750	31	2,558	8.8	34	31	2,396	−10.4	54	30	2,565	5.5	47	31	2,310	−16.2	70	30	2,550	3.0	41	28	2,562	9.6	49	31	2,490	−1.0	42
700	31	3,120	5.4	32	31	2,919	−12.3	48	30	3,123	3.1	42	31	2,820	−18.0	67	30	3,102	0.2	41	28	3,126	7.1	37	31	3,033	−3.2	41
650	31	3,722	1.8	----	31	3,488	−15.0	49	29	3,726	0.0	38	31	3,384	−20.0	68	29	3,691	−3.2	41	27	3,732	3.2	33	31	3,620	−6.5	39
600	31	4,363	−2.4	----	31	4,083	−18.2	53	28	4,358	−3.8	----	31	3,961	−22.9	----	28	4,318	−6.5	38	26	4,375	−0.8	----	31	4,237	−10.4	40
550	29	5,050	−7.1	----	30	4,737	−21.2	----	28	5,041	−8.0	----	31	4,596	−26.1	----	28	4,990	−10.8	----	25	5,065	−5.3	----	31	4,903	−14.9	42
500	29	5,786	−12.1	----	30	5,432	−25.5	----	28	5,774	−12.6	----	31	5,279	−30.1	----	27	5,721	−15.5	----	24	5,806	−10.6	----	31	5,615	−20.1	----
450	29	6,590	−18.2	----	29	6,199	−30.2	----	28	6,579	−18.4	----	31	6,034	−35.2	----	26	6,514	−20.9	----	24	6,611	−16.0	----	31	6,398	−25.4	----
400	28	7,455	−24.3	----	29	7,020	−35.7	----	27	7,489	−24.8	----	30	6,829	−40.2	----	26	7,369	−26.6	----	23	7,489	−22.4	----	31	7,232	−31.7	----
350	28	8,414	−31.2	----	26	7,945	−42.1	----	26	8,398	−32.0	----	30	7,727	−46.2	----	26	8,320	−33.1	----	23	8,455	−29.6	----	31	8,162	−38.7	----
300	28	9,505	−39.0	----	24	8,958	−48.8	----	26	9,470	−39.8	----	29	8,734	−51.2	----	26	9,387	−40.5	----	23	9,536	−37.6	----	31	9,205	−45.4	----
250	27	10,715	−48.1	----	22	10,147	−53.3	----	26	10,691	−48.9	----	27	9,911	−53.8	----	26	10,606	−48.7	----	22	10,770	−46.8	----	31	10,402	−51.3	----
200	25	12,157	−56.7	----	13	11,620	−53.2	----	24	12,129	−57.5	----	19	11,371	−52.8	----	22	12,064	−56.8	----	22	12,213	−56.2	----	31	11,839	−54.0	----
175	25	12,997	−59.3	----	9	12,436	−52.9	----	23	12,964	−60.3	----	11	12,232	−49.9	----	22	12,905	−58.8	----	21	13,056	−60.4	----	30	12,687	−54.8	----
150	24	13,962	−62.7	----	----	----	----	----	13	13,916	−63.5	----	10	13,244	−51.2	----	17	13,875	−60.0	----	20	14,207	−63.9	----	26	13,659	−56.5	----
125	15	15,076	−68.1	----	----	----	----	----	10	15,024	−67.4	----	7	14,486	−53.4	----	11	15,002	−62.7	----	15	15,109	−67.7	----	17	14,809	−59.2	----
100	5	16,399	−73.7	----	----	----	----	----	5	16,367	−71.8	----	----	----	----	----	----	----	----	----	6	16,437	−70.5	----	10	16,208	−63.4	----

See footnote at end of table.

TABLE 1.—*Mean dynamic height (geopotential) in units of 0.98 dynamic meter, temperature in degrees centigrade, and relative humidity in percent, for standard pressures, as obtained by radiosondes during January 1946*—Continued

Standard pressure surface (mb.)	Denver, Colo. (836.1 mb.)				Dodge City, Kans. (925.5 mb.)				El Paso, Tex. (883.3 mb.)				Ely, Nev. (810.8 mb.)				Fort Worth, Tex. (994.2 mb.)				Glasgow, Mont. (937.9 mb.)				Grand Junction, Colo. (861.3 mb.)			
	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity
Surface	31	1,616	−11.8	56	31	787	0.0	70	31	1,195	5.8	55	31	1,908	−6.4	77	31	211	7.3	69	31	648	−8.9	85	30	1,414	−2.9	68
1,000	31	150	(*)	----	31	156	(*)	----	31	163	(*)	----	31	227	(*)	----	31	157	(*)	----	31	144	(*)	----	30	208	(*)	----
950	31	577	(*)	----	31	576	(*)	----	31	597	(*)	----	31	650	(*)	----	31	590	6.2	63	31	549	(*)	----	30	633	(*)	----
900	31	1,019	(*)	----	31	1,011	2.1	60	31	1,042	(*)	----	31	1,083	(*)	----	31	1,026	5.7	57	31	970	−4.6	78	30	1,068	(*)	----
850	31	1,482	(*)	----	31	1,472	1.8	46	31	1,509	4.8	53	31	1,534	(*)	----	31	1,493	4.8	57	31	1,419	−5.0	68	30	1,518	−2.9	65
800	31	1,970	1.2	39	31	1,959	−0.3	41	31	2,001	2.5	52	31	2,014	−3.1	66	31	1,986	3.0	57	31	1,894	−7.0	64	30	1,999	−3.5	53
750	31	2,489	−2.2	42	31	2,477	−2.7	39	31	2,526	0.1	50	31	2,531	−3.4	50	31	2,514	1.0	57	31	2,399	−9.5	64	30	2,515	−5.2	54
700	31	3,030	−6.2	46	31	3,018	−5.6	40	31	3,071	−2.9	50	31	3,068	−5.6	45	31	3,059	−1.7	49	31	2,924	−12.7	69	30	3,047	−7.6	53
650	31	3,607	−10.2	49	31	3,598	−9.2	42	31	3,659	−6.4	47	31	3,649	−9.0	46	31	3,650	−4.9	45	31	3,493	−15.7	69	30	3,622	−10.6	52
600	31	4,218	−14.2	50	31	4,210	−13.0	42	31	4,276	−9.8	43	31	4,262	−12.7	48	30	4,274	−8.6	42	31	4,086	−18.8	67	30	4,232	−14.2	54
550	31	4,874	−18.4	51	30	4,871	−17.6	42	31	4,937	−14.3	43	31	4,922	−16.5	44	30	4,946	−13.1	39	31	4,731	−22.8	----	30	4,888	−18.6	53
500	31	5,576	−23.6	----	29	5,572	−22.7	----	31	5,658	−19.3	42	31	5,630	−21.7	----	30	5,662	−18.0	----	31	5,421	−27.0	----	30	5,590	−23.5	----
450	29	6,347	−29.1	----	29	6,344	−28.0	----	31	6,440	−24.5	----	31	6,404	−27.1	----	30	6,448	−23.6	----	31	6,179	−32.3	----	30	6,358	−29.0	----
400	28	7,174	−35.3	----	29	7,174	−33.7	----	31	7,282	−30.4	----	31	7,230	−33.0	----	30	7,292	−29.8	----	31	6,994	−38.2	----	30	7,184	−35.1	----
350	27	8,097	−42.0	----	29	8,097	−40.2	----	31	8,218	−37.3	----	30	8,158	−40.0	----	30	8,230	−36.5	----	29	7,901	−44.8	----	30	8,102	−41.9	----
300	24	9,125	−49.1	----	28	9,136	−47.2	----	30	9,265	−44.9	----	28	9,189	−47.6	----	29	9,282	−43.3	----	27	8,913	−51.4	----	30	9,128	−49.4	----
250	19	10,296	−53.9	----	27	10,334	−52.3	----	30	10,465	−51.8	----	27	10,374	−55.3	----	25	10,487	−50.0	----	22	10,072	−57.1	----	26	10,294	−55.4	----
200	14	11,700	−53.0	----	22	11,764	−54.1	----	26	11,900	−53.9	----	16	11,763	−56.8	----	21	11,920	−54.7	----	16	11,474	−54.7	----	19	11,690	−55.5	----
175	11	12,550	−51.2	----	19	12,616	−54.4	----	25	12,755	−55.5	----	11	12,571	−52.3	----	18	12,754	−56.5	----	12	12,312	−51.5	----	8	12,484	−52.7	----
150	7	13,549	−53.9	----	14	13,599	−55.3	----	23	13,745	−59.2	----	7	13,542	−53.5	----	15	13,716	−59.4	----	7	13,336	−52.7	----	7	13,488	−54.4	----
125	----	----	----	----	7	14,746	−56.3	----	19	14,858	−62.8	----	----	----	----	----	13	14,836	−61.8	----	----	----	----	----	----	----	----	----
100	----	----	----	----	----	----	----	----	7	16,217	−65.8	----	----	----	----	----	8	16,188	−65.2	----	----	----	----	----	----	----	----	----

Standard pressure surface (mb.)	Great Falls, Mont. (884.6 mb.)				Green Bay, Wis. (994.1 mb.)				Greensboro, N. C. (988.6 mb.)				Hatteras, N. C. (1,021.7 mb.)				Havana, Cuba [1] (---- mb.)				Huntington, W. Va. (999.9 mb.)				International Falls, Minn. (972.8 mb.)			
	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity
Surface	30	1,128	−0.5	56	31	182	−6.9	77	31	273	3.4	79	30	3	7.9	84	----	----	----	----	31	172	1.8	75	31	343	−13.9	88
1,000	30	134	(*)	----	31	134	(*)	----	31	180	(*)	----	30	180	9.0	77	----	----	----	----	31	170	(*)	----	31	131	(*)	----
950	30	554	(*)	----	31	539	−7.7	77	31	597	3.2	69	30	608	6.9	69	----	----	----	----	31	585	1.1	73	31	524	−15.0	90
900	30	990	(*)	----	31	954	−8.5	74	31	1,034	2.3	65	30	1,048	5.5	63	----	----	----	----	31	1,017	−0.9	73	31	931	−14.0	89
850	30	1,447	−0.7	50	30	1,397	−8.4	63	31	1,496	1.6	58	30	1,514	3.5	59	----	----	----	----	31	1,472	−2.3	69	31	1,367	−12.1	77
800	30	1,929	−3.2	52	30	1,866	−9.3	54	31	1,983	0.1	59	30	2,005	2.1	50	----	----	----	----	31	1,952	−3.3	65	31	1,831	−12.3	68
750	30	2,439	−6.5	55	30	2,368	−10.6	50	31	2,505	−1.4	57	30	2,528	0.5	44	----	----	----	----	31	2,467	−4.6	62	31	2,328	−13.8	62
700	30	2,973	−8.5	56	30	2,892	−12.7	48	30	3,046	−3.7	51	30	3,076	−1.9	43	----	----	----	----	31	3,003	−6.6	53	31	2,844	−15.7	57
650	29	3,545	−13.1	60	29	3,462	−15.1	48	30	3,636	−6.8	48	30	3,664	−4.8	39	----	----	----	----	29	3,578	−9.9	50	31	3,466	−18.4	57
600	29	4,149	−17.0	58	27	4,065	−18.4	48	29	4,248	−10.5	48	30	4,287	−8.5	39	----	----	----	----	29	4,187	−13.1	52	30	3,987	−21.8	----
550	29	4,795	−21.6	----	27	4,712	−22.2	----	28	4,909	−15.2	49	30	4,957	−12.7	41	----	----	----	----	29	4,847	−17.0	----	30	4,625	−26.0	----
500	29	5,491	−26.5	----	27	5,403	−26.7	----	28	5,622	−19.7	50	30	5,678	−17.7	42	----	----	----	----	29	5,554	−21.6	----	30	5,305	−30.4	----
450	29	6,250	−31.7	----	27	6,164	−31.6	----	28	6,403	−25.0	----	30	6,466	−22.3	----	----	----	----	----	29	6,328	−26.8	----	30	6,056	−35.0	----
400	29	7,064	−37.8	----	27	6,980	−37.3	----	28	7,242	−31.2	----	30	7,315	−28.4	----	----	----	----	----	28	7,161	−32.9	----	30	6,841	−40.9	----
350	29	7,975	−44.3	----	27	7,888	−44.0	----	28	8,174	−37.8	----	30	8,258	−35.5	----	----	----	----	----	25	8,096	−39.1	----	29	7,743	−47.9	----
300	27	8,992	−51.3	----	26	8,900	−50.5	----	28	9,221	−44.7	----	30	9,312	−43.3	----	----	----	----	----	23	9,136	−46.3	----	26	8,743	−53.8	----
250	23	10,164	−56.4	----	25	10,073	−53.9	----	25	10,410	−51.3	----	28	10,520	−50.8	----	----	----	----	----	22	10,337	−52.3	----	22	9,920	−55.4	----
200	18	11,558	−54.1	----	23	11,500	−52.6	----	21	11,828	−55.8	----	22	11,956	−56.1	----	----	----	----	----	18	11,768	−56.1	----	18	11,379	−51.5	----
175	12	12,398	−51.1	----	23	12,362	−52.5	----	16	12,690	−57.2	----	20	12,786	−58.1	----	----	----	----	----	16	12,625	−56.9	----	15	12,252	−50.5	----
150	8	13,370	−50.6	----	19	13,353	−53.2	----	8	13,605	−57.7	----	10	13,698	−59.9	----	----	----	----	----	11	13,609	−57.6	----	11	13,253	−51.2	----
125	----	----	----	----	13	14,520	−55.1	----	----	----	----	----	----	----	----	----	----	----	----	----	8	14,733	−58.8	----	8	14,471	−53.0	----
100	----	----	----	----	6	15,936	−54.1	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	5	15,974	−54.9	----

Standard pressure surface (mb.)	Joliet, Ill. (996.7 mb.)				Lake Charles, La. (1,019.3 mb.)				Lander, Wyo. (835.0 mb.)				Las Vegas, Nev. (953.4 mb.)				Little Rock, Ark. (1,010.5 mb.)				Louisville, Ky (1,000.5 mb.)				Mazatlan, Mexico (1,006.7 mb.)			
	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity
Surface	31	178	−3.5	81	30	5	9.8	86	31	1,632	−5.5	73	31	574	6.8	39	31	79	4.9	78	31	165	1.0	76	25	79	19.7	75
1,000	31	150	(*)	----	30	163	10.3	77	31	185	(*)	----	31	176	(*)	----	31	177	(*)	----	31	168	(*)	----	25	137	19.0	69
950	31	557	−4.6	79	30	594	8.6	73	31	602	(*)	----	31	606	(*)	----	31	587	4.1	66	31	580	0.4	74	25	584	19.7	48
900	31	961	−4.6	65	30	1,037	8.5	65	31	1,033	(*)	----	31	1,051	8.3	29	31	1,020	3.1	61	31	1,013	−0.8	63	25	1,043	17.4	45
850	31	1,432	−4.6	58	30	1,510	8.1	57	31	1,490	(*)	----	31	1,520	5.5	30	31	1,483	2.4	57	31	1,469	−1.3	56	25	1,525	14.5	39
800	31	1,908	−6.0	55	30	2,009	6.6	52	31	1,971	−1.7	53	31	2,013	2.6	32	31	1,972	1.1	54	31	1,951	−2.3	49	25	2,037	11.8	----
750	31	2,417	−7.6	53	29	2,547	5.0	44	31	2,482	−4.5	48	31	2,535	0.2	31	31	2,496	−0.1	49	31	2,461	−3.8	44	25	2,579	8.7	----
700	31	2,947	−9.9	49	29	3,099	2.3	40	31	3,022	−7.9	51	31	3,062	−2.4	----	31	3,038	−2.8	50	31	3,004	−6.5	41	25	3,140	5.2	----
650	31	3,520	−12.7	51	28	3,698	−1.1	34	31	3,593	−11.6	52	31	3,668	−6.3	----	31	3,628	−5.5	47	31	3,581	−9.1	41	24	3,741	1.1	----
600	31	4,123	−16.1	51	27	4,327	−4.7	----	31	4,202	−15.6	52	31	4,287	−10.3	----	31	4,247	−8.9	41	31	4,196	−12.4	45	24	4,380	−2.7	----
550	29	4,767	−20.0	50	27	5,012	−8.9	----	31	4,852	−20.1	54	31	4,954	−14.8	----	30	4,918	−13.4	45	31	4,855	−16.6	48	24	5,064	−7.0	----
500	28	5,465	−24.4	----	27	5,738	−13.8	----	31	5,532	−24.9	----	30	5,666	−19.8	----	29	5,630	−18.4	47	31	5,567	−20.8	----	23	5,802	−12.1	----
450	28	6,229	−29.4	----	27	6,539	−19.3	----	31	6,314	−30.5	----	30	6,444	−25.3	----	29	6,416	−23.6	----	31	6,340	−25.8	----	23	6,610	−17.9	----
400	27	7,060	−34.9	----	27	7,397	−26.0	----	31	7,136	−36.5	----	30	7,284	−31.8	----	29	7,260	−29.8	----	31	7,182	−31.6	----	23	7,469	−24.0	----
350	26	7,979	−41.1	----	27	8,352	−32.3	----	30	8,060	−42.7	----	29	8,213	−38.6	----	28	8,193	−36.6	----	30	8,111	−38.9	----	22	8,427	−31.3	----
300	24	9,012	−47.8	----	27	9,422	−40.0	----	30	9,082	−50.4	----	29	9,254	−46.2	----	28	9,244	−43.7	----	26	9,150	−46.2	----	21	9,499	−39.1	----
250	21	10,211	−54.0	----	27	10,644	−48.2	----	28	10,253	−56.7	----	28	10,449	−53.4	----	27	10,455	−50.8	----	21	10,362	−53.4	----	20	10,730	−47.4	----
200	17	11,636	−56.4	----	27	12,089	−55.4	----	20	11,657	−55.6	----	25	11,865	−55.7	----	26	11,888	−55.4	----	12	11,779	−54.1	----	16	12,180	−55.8	----
175	15	12,496	−55.9	----	23	12,937	−57.5	----	14	12,489	−53.7	----	23	12,718	−55.6	----	22	12,734	−55.6	----	9	12,641	−54.0	----	14	13,020	−59.6	----
150	11	13,451	−55.8	----	19	13,899	−60.8	----	8	13,488	−52.4	----	18	13,706	−56.6	----	18	13,714	−57.8	----	6	13,644	−56.2	----	14	13,975	−63.3	----
125	----	----	----	----	12	15,026	−64.2	----	----	----	----	----	10	14,846	−58.8	----	12	14,866	−62.0	----	----	----	----	----	7	15,061	−67.9	----

See footnote at end of table.

TABLE 1.—*Mean dynamic height (geopotential) in units of 0.98 dynamic meter, temperature in degrees centigrade, and relative humidity in percent, for standard pressures, as obtained by radiosondes during January 1946*—Continued

Standard pressure surface (mb.)	Medford, Oreg. (974.7 mb.)				Merida, Mexico (1,012.7 mb.)				Miami, Fla. (1,020.5 mb.)				Nashville, Tenn. (999.2 mb.)				North Platte, Nebr. (917.3 mb.)				Oakland, Calif. (1,023.6 mb.)				Ogden, Utah (868.5 mb.)			
	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity
Surface	31	409	3.6	84	29	27	24.8	72	31	4	18.7	85	30	180	3.5	76	31	849	−1.8	73	24	2	9.2	69	31	1,355	−3.5	76
1,000	31	200	(*)	----	29	137	22.8	73	31	179	19.0	80	30	171	(*)	----	31	150	(*)	----	24	195	9.5	61	31	222	(*)	----
950	31	625	3.9	80	29	585	20.0	74	31	621	163.	78	30	592	2.0	72	31	569	(*)	----	24	628	8.0	56	31	641	(*)	----
900	31	1,056	3.1	71	29	1,049	17.2	76	31	1,077	1.63	72	30	1,024	1.2	61	31	1,000	0.2	64	24	1,064	7.0	42	31	1,073	(*)	----
850	31	1,518	1.4	64	29	1,535	14.9	71	31	1,557	12.3	56	30	1,483	0.6	48	31	1,459	0.2	52	24	1,533	6.0	----	31	1,525	−2.3	69
800	31	2,004	−1.0	61	29	2,047	12.4	63	31	2,064	10.1	46	30	1,969	−0.1	47	31	1,943	−2.3	50	24	2,028	4.1	----	31	2,005	−4.1	62
750	31	2,522	−3.4	56	28	2,594	10.4	54	31	2,603	8.2	32	30	2,491	−1.9	42	31	2,457	−5.2	49	24	2,559	1.9	----	31	2,515	−6.7	59
700	31	3,059	−6.0	59	28	3,160	7.8	40	31	3,165	6.1	----	30	3,031	−4.1	40	31	2,991	−8.3	48	24	3,103	−1.1	----	31	3,049	−9.0	57
650	31	3,642	−9.3	50	28	3,769	4.7	30	31	3,772	3.0	----	30	3,618	−7.2	42	31	3,567	−11.9	50	23	3,696	−5.2	----	31	3,621	−11.8	51
600	31	4,254	−12.6	51	28	4,416	1.3	----	31	4,413	−0.5	----	30	4,231	−10.6	42	31	4,171	−15.4	51	22	4,311	−9.7	----	31	4,228	−15.6	54
550	31	4,911	−16.7	54	27	5,110	−3.1	----	31	5,10[illegible]	−4.8	----	30	4,899	−14.4	46	31	4,826	−19.6	54	22	4,981	−14.0	----	31	4,880	−19.7	54
500	31	5,619	−21.7	----	26	5,860	−8.3	----	30	5,84[illegible]	−9.9	----	29	5,610	−19.2	----	31	5,523	−24.3	----	22	5,695	−19.2	----	31	5,580	−24.9	----
450	31	6,391	−27.1	----	26	6,678	−14.0	----	30	6,658	−15.5	----	29	6,392	−24.6	----	31	6,290	−29.5	----	22	6,473	−25.1	----	31	6,345	−30.3	----
400	31	7,225	−33.1	----	26	7,555	−20.6	----	30	7,530	−22.3	----	29	7,231	−30.8	----	30	7,116	−35.6	----	21	7,322	−31.0	----	31	7,166	−36.2	----
350	31	8,149	−40.4	----	26	8,528	−28.0	----	30	8,495	−30.0	----	28	8,167	−37.6	----	30	8,032	−42.0	----	21	8,255	−38.1	----	30	8,092	−42.1	----
300	31	9,181	−48.4	----	26	9,616	−36.7	----	30	9,574	−38.4	----	27	9,214	−45.0	----	30	9,059	−49.0	----	21	9,297	−46.5	----	27	9,113	−49.6	----
250	31	10,357	−56.1	----	24	10,852	−46.0	----	30	10,801	−48.0	----	24	10,408	−51.7	----	28	10,251	−54.0	----	20	10,484	−54.9	----	27	10,287	−56.4	----
200	21	11,754	−58.2	----	22	12,305	−56.0	----	29	12,239	−57.4	----	20	11,840	−55.2	----	19	11,672	−54.1	----	16	11,888	−59.3	----	23	11,704	−57.6	----
175	15	12,572	−55.9	----	21	13,147	−60.2	----	28	13,080	−60.7	----	13	12,666	−54.8	----	15	12,521	−52.9	----	12	12,731	−57.9	----	17	12,526	−54.3	----
150	10	13,576	−57.5	----	19	14,100	−64.1	----	27	14,034	−63.9	----	11	13,657	−58.2	----	7	13,514	−53.5	----	7	13,734	−60.4	----	16	13,513	−55.7	----
125					10	15,213	−68.8	----	15	15,152	−68.9	----	5	14,845	−61.7	----	5	14,694	−55.9	----	5	14,826	−60.2	----	13	14,642	−56.6	----
100									5	16,458	−75.2	----													9	16,061	−56.2	----

	Oklahoma City, Okla. (972.4 mb.)				Omaha, Nebr. (981.5 mb.)				Phoenix, Ariz. (978.0 mb.)				Pittsburgh, Pa. (973.0 mb.)				Portland, Maine (1,014.8 mb.)				Rapid City, S. Dak. (901.2 mb.)				St. Louis, Mo. (998.9 mb.)			
Surface	31	391	3.0	78	31	308	−2.8	78	31	339	9.6	61	31	382	−0.6	73	31	20	−6.6	79	31	981	−3.4	68	29	171	0.3	78
1,000	31	161	(*)	----	31	159	(*)	----	31	151	(*)	----	31	161	(*)	----	31	133	−6.6	75	31	143	(*)	----	29	155	(*)	----
950	31	584	3.5	72	31	562	−3.5	79	31	587	12.6	44	31	580	−1.0	71	31	536	−6.7	73	31	562	(*)	----	29	579	−0.3	71
900	31	1,018	3.0	64	31	993	−2.3	66	31	1,033	9.7	43	31	1,002	−3.1	71	31	955	−7.9	71	31	992	−4.8	69	29	1,004	−0.5	50
850	31	1,480	2.3	55	31	1,447	−2.4	54	31	1,505	6.3	45	31	1,453	−4.5	65	31	1,399	−9.0	66	31	1,448	−0.5	51	29	1,461	−1.1	52
800	31	1,970	1.2	46	31	1,927	−3.7	47	31	1,999	3.3	43	31	1,929	−5.8	61	31	1,867	−9.8	58	31	1,930	−3.1	52	29	1,943	−2.7	50
750	31	2,492	−1.1	44	31	2,435	−5.8	47	31	2,526	0.1	40	31	2,440	−6.9	51	31	2,367	−10.8	57	31	2,440	−6.1	55	29	2,457	−4.6	50
700	31	3,034	−4.0	43	31	2,973	−8.6	51	31	3,068	−3.0	40	31	2,970	−9.0	51	31	2,893	−12.8	56	31	2,974	−9.3	57	29	2,994	−7.1	51
650	31	3,620	−7.3	41	31	3,543	−11.7	56	30	3,658	−6.4	40	31	3,547	−11.8	55	31	3,461	−14.6	53	31	3,549	−12.6	55	29	3,552	−9.6	48
600	31	4,236	−10.9	44	31	4,153	−15.3	57	30	4,273	−10.5	40	31	4,151	−14.8	55	30	4,059	−18.1	50	31	4,150	−16.4	58	29	4,183	−12.8	44
550	31	4,902	−15.3	44	31	4,807	−19.4	53	30	4,938	−15.3	42	30	4,802	−18.8	53	30	4,706	−21.7	50	31	4,803	−20.6	61	28	4,849	−16.5	44
500	30	5,618	−19.6	46	31	5,507	−23.8	----	30	5,649	−20.5	----	30	5,504	−23.2	----	30	5,400	−26.0	----	31	5,498	−25.3	----	28	5,558	−21.2	----
450	30	6,401	−25.0	----	31	6,268	−29.1	----	30	6,427	−26.3	----	29	6,268	−28.4	----	30	6,161	−31.1	----	31	6,260	−30.7	----	28	6,332	−26.3	----
400	28	7,233	−31.2	----	31	7,105	−35.3	----	30	7,262	−32.2	----	29	7,096	−33.9	----	30	6,980	−36.6	----	31	7,080	−36.6	----	28	7,170	−32.3	----
350	26	8,167	−38.0	----	31	8,018	−41.5	----	30	8,191	−38.6	----	28	8,009	−40.3	----	29	7,903	−42.2	----	31	7,992	−43.3	----	28	8,008	−38.9	----
300	26	9,213	−44.9	----	31	9,049	−47.9	----	30	9,234	−45.1	----	28	9,045	−46.8	----	28	8,919	−48.1	----	31	9,012	−51.0	----	27	9,147	−46.6	----
250	24	10,412	−51.5	----	28	10,245	−53.2	----	29	10,431	−51.2	----	26	10,223	−52.2	----	25	10,110	−53.2	----	26	10,204	−57.1	----	26	10,331	−58.8	----
200	19	11,859	−54.8	----	20	11,679	−54.5	----	23	11,870	−54.8	----	21	11,659	−53.4	----	19	11,551	−54.9	----	16	11,580	−55.3	----	23	11,748	−56.3	----
175	15	12,691	−55.3	----	16	12,531	−52.2	----	20	12,707	−55.4	----	16	12,500	−53.5	----	16	12,388	−53.7	----	12	12,424	−53.8	----	21	12,593	−55.1	----
150	15	13,668	−58.1	----	14	13,542	−53.0	----	15	13,686	−57.7	----	12	13,462	−53.1	----	11	13,391	−53.4	----	9	13,406	−53.3	----	16	13,567	−56.1	----
125	11	14,814	−60.7	----	10	14,701	−54.4	----	8	14,784	−58.1	----	5	14,620	−53.8	----	8	14,581	−55.7	----					12	14,720	−58.5	----
100	5	16,183	−62.2	----	6	16,083	−56.1	----																				

	St. Paul, Minn. (989.4 mb.)				San Antonio, Tex. (991.2 mb.)				San Juan, P. R. (1,015.5 mb.)				Santa Maria, Calif. (1,012.8 mb.)				Sault Ste. Marie, Mich. (989.8 mb.)				Spokane, Wash. (948.4 mb.)				Swan Island, W. I.[1] (---- mb.)			
Surface	31	225	−8.4	83	28	240	8.5	79	29	15	23.7	82	31	71	8.6	81	20	221	−7.4	86	31	598	0.1	87	----				----
1,000	31	140	(*)	----	28	165	(*)	----	29	149	22.8	82	31	177	10.2	75	20	139	(*)	----	31	170	(*)	----	----				----
950	31	541	−9.3	85	28	593	8.2	71	29	594	19.7	84	31	608	10.8	51	20	544	−9.1	90	31	585	(*)	----	----				----
900	31	957	−7.8	75	28	1,036	6.9	69	29	1,059	16.6	83	31	1,054	9.4	42	20	955	−10.2	90	31	1,017	−1.1	81	----				----
850	31	1,402	−7.2	62	28	1,506	7.1	63	29	1,545	13.5	77	31	1,526	7.3	37	20	1,395	−11.3	80	31	1,471	−3.1	76	----				----
800	31	1,874	−8.2	52	28	2,004	6.2	53	29	2,054	11.2	62	31	2,023	5.4	27	20	1,859	−12.3	71	31	1,949	−5.6	76	----				----
750	31	2,378	−10.0	50	28	2,538	4.5	41	28	2,593	9.3	38	31	2,551	2.8	----	20	2,358	−13.6	----	31	2,458	−7.9	71	----				----
700	31	2,903	−12.4	45	28	3,092	2.1	33	28	3,160	7.0	----	31	3,102	−0.4	----	20	2,874	−15.4	----	31	2,987	−10.4	65	----				----
650	31	3,469	−15.2	45	28	3,687	−1.3	35	28	3,766	4.6	----	31	3,690	−3.9	----	20	3,441	−17.6	----	31	3,558	−13.5	61	----				----
600	31	4,068	−17.9	44	28	4,319	−5.4	----	28	4,413	1.4	----	31	4,317	−8.0	----	20	4,028	−20.5	----	31	4,160	−17.1	61	----				----
550	31	4,718	−21.9	----	27	4,999	−9.6	----	28	5,106	−3.1	----	31	4,986	−12.5	----	19	4,662	−24.3	----	30	4,813	−21.1	----	----				----
500	30	5,406	−26.7	----	26	5,734	−14.3	----	27	5,855	−8.1	----	31	5,706	−17.8	----	19	5,349	−28.6	----	30	5,510	−25.7	----	----				----
450	30	6,168	−32.0	----	26	6,531	−19.5	----	27	6,676	−13.7	----	31	6,489	−23.5	----	19	6,106	−33.1	----	30	6,276	−31.0	----	----				----
400	30	6,983	−37.7	----	26	7,390	−25.5	----	27	7,550	−20.0	----	31	7,336	−30.0	----	17	6,904	−39.0	----	30	7,092	−37.1	----	----				----
350	30	7,891	−44.3	----	26	8,346	−32.3	----	26	8,526	−27.9	----	30	8,273	−37.3	----	15	7,836	−44.2	----	29	7,997	−44.2	----	----				----
300	29	8,910	−50.9	----	24	9,410	−39.8	----	26	9,613	−36.8	----	28	9,322	−45.6	----	15	8,854	−50.5	----	29	9,015	−51.1	----	----				----
250	24	10,089	−54.5	----	24	10,634	−47.7	----	24	10,852	−46.2	----	27	10,514	−53.7	----	13	10,035	−54.6	----	27	10,184	−56.7	----	----				----
200	18	11,539	−52.4	----	18	12,089	−55.2	----	21	12,301	−56.6	----	24	11,940	−58.0	----	11	11,473	−52.8	----	20	11,566	−56.6	----	----				----
175	11	12,409	−50.5	----	16	12,942	−58.0	----	19	13,138	−60.9	----	16	12,793	−58.4	----	8	12,325	−51.6	----	14	12,397	−53.7	----	----				----
150	9	13,418	−50.7	----	10	13,887	−59.2	----	13	14,080	−65.6	----	10	13,784	−60.1	----	5	13,404	−53.9	----	9	13,426	−54.3	----	----				----
125									5	15,164	−71.3	----	8	14,906	−62.2	----					5	14,619	−55.4	----	----				----

See footnotes at end of table.

TABLE 1.—*Mean dynamic height (geopotential) in units of 0.98 dynamic meter, temperature in degrees centigrade, and relative humidity in percent, for standard pressures, as obtained by radiosondes during January 1946*—Continued

Standard pressure surface (mb.)	Tacubaya, Mexico (774.3 mb.)				Tampa, Fla. (1,021.2 mb.)				Tatoosh Island, Wash. (1,013.8 mb.)				Toledo, Ohio (995.0 mb.)				Washington, D. C. (1,018.3 mb.)			
	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity
Surface	29	2,306	14.0	50	30	3	15.7	84	31	31	6.7	83	31	191	−2.3	78	31	25	2.3	67
1,000	29	81	(*)	----	30	181	15.9	78	31	143	(*)	----	31	150	(*)	----	31	171	1.6	66
950	29	535	(*)	----	30	616	14.3	74	31	560	3.2	81	31	557	−3.7	76	31	585	0.2	67
900	29	1,009	(*)	----	30	1,072	12.1	69	31	997	0.2	80	31	982	−4.9	72	31	1,016	−1.2	65
850	29	1,504	(*)	----	30	1,550	10.5	57	31	1,454	−2.2	78	31	1,431	−5.8	61	31	1,471	−1.7	59
800	29	2,029	(*)	----	30	2,054	9.1	43	31	1,933	−4.7	74	31	1,906	−6.9	56	31	1,953	−2.7	58
750	29	2,579	12.5	49	30	2,592	7.2	38	31	2,441	−7.0	67	31	2,412	−8.0	49	31	2,468	−4.3	53
700	29	3,148	8.6	51	30	3,150	4.2	33	31	2,974	−9.6	61	31	2,942	−10.1	46	31	3,005	−6.7	48
650	29	3,760	4.1	55	30	3,752	1.2	----	31	3,544	−12.9	60	31	3,515	−13.0	49	31	3,586	−9.4	46
600	29	4,403	−0.5	55	30	4,389	−2.6	----	31	4,149	−16.3	60	31	4,117	−16.1	49	31	4,197	−12.6	49
550	29	5,091	−4.4	44	30	5,072	−6.6	----	29	4,806	−19.7	63	30	4,768	−19.9	53	31	4,857	−16.8	51
500	29	5,838	−9.1	38	29	5,810	−11.6	----	28	5,505	−24.2	----	30	5,469	−24.2	----	30	5,562	−22.0	----
450	28	6,655	−14.5	40	29	6,616	−17.1	----	27	6,266	−29.3	----	30	6,237	−29.1	----	30	6,336	−26.9	----
400	28	7,530	−20.4	----	29	7,483	−23.5	----	27	7,096	−35.3	----	30	7,063	−34.9	----	30	7,172	−32.4	----
350	27	8,505	−27.8	----	26	8,444	−31.0	----	27	8,012	−41.9	----	28	7,987	−41.0	----	30	8,100	−39.0	----
300	24	9,594	−36.2	----	24	9,523	−38.6	----	26	9,040	−48.8	----	25	9,020	−47.7	----	30	9,141	−45.8	----
250	22	10,831	−46.2	----	23	10,753	−48.1	----	23	10,215	−55.2	----	28	10,207	−53.4	----	30	10,336	−52.3	----
200	15	12,281	−56.6	----	21	12,185	−58.2	----	21	11,637	−56.4	----	25	11,640	−54.4	----	29	11,772	−56.6	----
175	12	13,115	−61.9	----	17	13,033	−60.2	----	16	12,486	−54.6	----	19	12,506	−54.1	----	24	12,626	−56.7	----
150	6	14,064	−66.6	----	14	13,988	−63.4	----	15	13,476	−53.5	----	16	13,505	−56.0	----	21	13,601	−57.9	----
125					9	15,097	−67.7	----	10	14,619	−53.6	----	10	14,631	−56.8	----	13	14,722	−59.6	----
100													5	16,045	−58.1	----				

[1] Data not yet received.

[*] Temperature and relative humidity data for this level are not available or are available only for certain days. See note entitled "Change in Summarization of Radiosonde Data," in this issue of the MONTHLY WEATHER REVIEW.

NOTE.—All observations scheduled between 0300 and 0500, G. C. T., except at Mazatlan and Merida, where they are taken near 0200, G. C. T.

"Number of observations" refers to those of dynamic height only. (In a few cases temperature or humidity data may be missing for one or more standard pressure surfaces of some observations.) Relative humidity data are not published for standard pressure surfaces having a corresponding mean temperature below −20° C.

All relative humidity observations are obtained by electric hygrometer and have been adjusted to compensate for the values occurring below the operating range of the humidity element. For explanation of the adjustment see article entitled "Curve Method for Obtaining Monthly Means of Relative Humidity," page 241, MONTHLY WEATHER REVIEW, December 1944.

None of the means included in these tables are based on less than 15 observations at the surface or 5 observations at a standard pressure level.

TABLE 2.—*Free-air resultant winds based on pilot balloon observations made near 5 p. m., E. S. T. (2200 G. C. T.) during January 1946. Directions given in degrees from north (N=360°, E=90°, S=180°, W=270°). Velocities in meters per second*

Altitude (meters) m. s. l.	Abilene, Tex. (534 m.)			Albuquerque, N. Mex. (1,630 m.)			Atlanta, Ga. (299 m.)			Billings, Mont. (1,095 m.)			Bismarck, N. Dak. (512 m.)			Boise, Idaho (868 m.)		
	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity
Surface	28	286	1.5	30	284	0.8	24	262	2.4	31	250	5.4	30	297	3.3	31	38	1.1
500	----	----	----	----	----	----	24	267	2.2	----	----	----	----	----	----	----	----	----
1,000	28	266	2.4	----	----	----	24	258	3.5	----	----	----	30	296	8.0	31	58	0.9
1,500	27	281	3.9	----	----	----	23	270	6.7	31	263	8.6	26	296	10.6	31	276	2.2
2,000	25	272	5.7	30	288	1.3	22	266	10.5	30	275	12.3	23	294	11.9	29	277	4.8
2,500	23	267	9.7	30	291	3.0	19	268	12.7	28	286	13.5	22	295	12.8	25	276	7.0
3,000	20	262	12.6	28	300	5.0	17	267	14.1	27	290	13.2	21	294	15.3	23	279	8.1
4,000	17	269	15.6	22	289	12.0	----	----	----	21	292	14.8	19	286	17.3	19	290	9.6
5,000	16	269	18.8	18	277	14.6	----	----	----	17	301	17.6	17	288	17.4	19	298	11.8
6,000	15	260	22.0	16	280	15.5	----	----	----	14	306	19.0	12	287	18.6	16	294	14.6
8,000	----	----	----	10	269	18.4	----	----	----	----	----	----	----	----	----	12	302	16.6

Altitude (meters) m. s. l.	Brownsville, Tex. (7 m.)			Buffalo, N. Y. (220 m.)			Burlington, Vt. (100 m.)			Charleston, S. C. (16 m.)			Cincinnati, Ohio (150 m.)			Denver, Colo. (1,627 m.)			El Paso, Tex. (1,198 m.)		
	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity
Surface	26	132	1.5	28	229	4.6	29	219	2.1	28	282	0.9	25	237	1.6	31	276	1.5	29	283	1.2
500	26	144	2.1	28	231	7.5	29	217	5.3	28	230	2.9	25	227	3.6	----	----	----	----	----	----
1,000	22	183	2.1	25	245	12.2	27	260	7.8	27	253	5.7	23	241	6.0	----	----	----	----	----	----
1,500	21	241	4.2	16	270	10.5	21	270	13.1	24	253	8.6	21	263	9.8	----	----	----	29	275	2.7
2,000	18	255	5.8	11	270	12.3	20	267	15.9	19	260	11.4	18	277	13.6	31	275	3.1	29	290	2.9
2,500	15	257	9.3	----	----	----	16	276	18.8	18	268	13.0	18	277	14.9	30	293	4.0	25	284	4.0
3,000	15	250	11.0	----	----	----	11	279	19.8	15	268	15.2	13	283	15.6	29	296	5.0	21	281	8.3
4,000	15	252	14.2	----	----	----	11	275	25.2	14	272	20.0	----	----	----	26	306	9.2	19	271	12.3
5,000	15	255	17.0	----	----	----	----	----	----	11	264	21.5	----	----	----	25	301	11.2	12	272	12.4
6,000	15	248	20.6	----	----	----	----	----	----	11	266	25.6	----	----	----	22	308	10.5	----	----	----
8,000	10	254	28.8	----	----	----	----	----	----	----	----	----	----	----	----	14	271	14.3	----	----	----

Altitude (meters) m. s. l.	Ely, Nev. (1,910 m.)			Grand Junction, Colo. (1,413 m.)			Greensboro, N. C. (271 m.)			Havre, Mont. (767 m.)			Jacksonville, Fla. (16 m.)			Joliet, Ill. (178 m.)			Las Vegas, Nev. (573 m.)			Little Rock, Ark. (88 m.)			Medford, Oreg. (416 m.)			Miami, Fla. (12 m.)			Mobile, Ala. (66 m.)			Nashville, Tenn. (194 m.)			New York, N. Y. (15 m.)		
	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity
Surface	30	6	1.5	31	294	1.5	24	242	1.0	30	261	3.8	28	223	1.0	24	241	3.7	31	16	2.8	26	138	0.1	27	261	1.0	30	124	2.8	19	341	0.7	28	233	2.2	28	288	3.9
500	----	----	----	----	----	----	24	255	2.0	----	----	----	28	212	3.3	24	245	5.2	----	----	----	26	305	1.3	27	260	1.1	30	121	3.9	19	328	1.9	28	222	4.1	27	276	6.5
1,000	----	----	----	----	----	----	24	264	5.5	30	259	8.3	27	222	3.7	20	255	8.0	31	15	3.0	24	288	2.7	27	245	0.9	29	141	2.8	16	270	3.4	23	231	7.1	27	274	8.5
1,500	----	----	----	31	292	1.7	24	266	9.1	30	272	12.7	25	241	6.9	18	285	11.0	31	1	3.0	20	287	5.3	27	223	2.5	27	176	2.4	14	248	5.9	21	252	9.0	23	285	12.5
2,000	30	355	1.8	31	290	1.9	23	271	12.6	29	282	13.0	23	240	7.7	17	284	13.9	31	341	3.8	20	279	7.2	24	237	4.2	22	208	3.5	13	268	6.6	18	274	9.1	21	284	16.8
2,500	30	330	2.5	28	264	2.7	18	280	14.4	25	287	13.9	21	263	8.6	14	281	17.0	31	341	4.3	19	270	10.0	19	273	3.9	21	215	4.7	12	282	7.8	18	274	10.9	16	286	18.9
3,000	28	316	4.0	27	274	4.0	16	282	16.0	20	288	14.2	20	256	10.2	11	297	20.0	29	342	5.9	16	279	11.4	15	281	4.9	21	225	4.8	12	278	10.4	16	281	11.6	----	----	----
4,000	23	317	7.3	23	308	8.7	14	286	21.7	12	296	16.2	14	251	13.8	----	----	----	27	330	7.8	16	275	15.5	13	294	7.3	17	251	4.4	----	----	----	15	276	17.2	----	----	----
5,000	19	319	10.4	17	312	9.6	13	279	24.3	----	----	----	11	250	16.0	----	----	----	25	326	10.6	12	282	16.0	10	292	10.7	15	244	7.4	----	----	----	14	273	20.0	----	----	----
6,000	17	321	13.1	16	298	11.5	10	275	29.3	----	----	----	----	----	----	----	----	----	22	296	11.6	11	287	19.4	----	----	----	14	242	1.0	----	----	----	11	260	24.0	----	----	----
8,000	12	339	15.9	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	10	290	14.3	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----

TABLE 2.—*Free-air resultant winds based on pilot balloon observations made near 5 p. m., E. S. T. (2200 G. C. T.), during January 1946. Directions given in degrees from north (N=360°, E=90°, S=190°, W=270°). Velocities in meters per second*—Continued

Altitude (meters) m. s. l.	Oakland, Calif. (8 m.)			Oklahoma City, Okla. (396 m.)			Omaha, Nebr. (306 m.)			Phoenix, Ariz. (338 m.)			Rapid City, S. Dak. (982 m.)			St. Louis, Mo. (181 m.)			St. Paul, Minn. (225 m.)			San Antonio, Tex. (240 m.)			San Diego, Calif. (15 m.)			Sault Ste. Marie, Mich. (225 m.)			Seattle, Wash. (116 m.)			Spokane, Wash. (603 m.)			Washington, D. C (24 m.)		
	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity
Surface	31	331	1.2	24	283	1.8	29	299	1.6	31	71	0.5	31	331	3.7	28	253	2.5	23	252	2.7	27	262	0.4	30	265	3.0	15	230	1.8	29	201	3.9	29	234	2.6	27	277	1.8
500	30	352	3.2	24	282	2.2	29	280	2.2	31	48	0.6	---	---	---	28	246	4.3	23	263	4.3	27	324	0.7	30	323	2.1	15	237	3.3	29	210	7.5	---	---	---	27	256	4.4
1,000	30	358	2.3	24	277	2.0	25	268	6.2	31	16	0.7	31	330	3.7	25	263	7.4	21	279	7.3	24	229	1.0	27	29	2.6	---	---	---	24	216	8.3	29	218	5.0	26	268	5.9
1,500	30	336	4.1	24	288	4.1	21	279	10.3	30	347	1.1	31	311	7.6	22	280	10.5	21	290	10.3	18	248	5.5	26	19	4.1	---	---	---	15	226	6.8	20	236	7.3	26	272	8.8
2,000	30	318	4.9	23	301	5.6	21	286	11.8	29	8	1.5	30	298	8.9	22	275	13.3	20	288	13.7	17	263	6.6	25	19	5.2	---	---	---	14	242	7.3	16	264	7.8	21	286	11.6
2,500	30	313	6.0	23	281	7.4	20	286	12.6	29	349	2.4	29	299	11.3	22	275	15.4	18	290	15.9	14	274	9.2	24	8	6.6	---	---	---	13	271	7.6	15	271	9.0	19	280	15.7
3,000	30	317	7.9	23	268	9.7	19	286	13.2	28	348	4.0	27	299	12.2	22	277	15.8	16	288	17.2	14	271	11.2	23	355	7.2	---	---	---	12	272	8.7	14	281	11.0	17	277	17.7
4,000	29	309	10.5	19	273	14.2	19	291	18.2	22	313	7.8	24	292	13.6	20	280	19.9	15	288	20.0	13	268	13.4	18	341	10.3	---	---	---	---	---	---	10	294	14.8	16	278	22.8
5,000	25	313	11.7	17	272	19.5	18	296	20.4	20	309	11.6	18	290	12.8	16	292	21.5	12	289	20.9	12	270	18.1	16	330	11.6	---	---	---	---	---	---	---	---	---	12	274	26.3
6,000	23	312	14.5	16	271	21.7	16	294	21.9	16	302	12.0	18	293	14.2	14	297	24.0	10	293	23.8	---	---	---	14	321	12.4	---	---	---	---	---	---	---	---	---	11	272	28.9
8,000	11	305	14.8	---	---	---	10	289	20.1	11	283	16.7	---	---	---	12	300	30.0	---	---	---	---	---	---	10	306	17.6	---	---	---	---	---	---	---	---	---	---	---	---
10,000	12	315	16.6	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

TABLE 3.—*Maximum free-air wind velocities (m. p. s.) for different sections of the United States based on pilot balloon observations during January 1946*

Section	Surface to 2,500 meters (m. s. l.)					Above 2,500 to 5,000 meters (m. s. l.)					Above 5,000 meters (m. s. l.)				
	Maximum velocity	Direction	Altitude (m.) m. s. l.	Date	Station	Maximum velocity	Direction	Altitude (m.) m.s.l.	Date	Station	Maximum velocity	Direction	Altitude (m.) m.s.l.	Date	Station
Northeast [1]	63.2	NW.	1,542	26	Caribou, Maine	59.8	WNW.	4,547	14	Portland, Maine	93.7	W.	7,837	20	Caribou, Maine.
East-Central [2]	63.2	WNW.	1,917	14	Portland, Maine	60.7	WSW.	3,600	31	Knoxville, Tenn	110.0	W.	10,930	29	Huntington, W. Va.
Southeast [3]	42.0	W.	2,151	31	Greensboro, N. C	42.2	SW.	2,938	5	Birmingham, Ala	60.0	W.	12,791	2	Charleston, S. C.
North-Central [4]	35.0	WNW.	1,962	31	Spartanburg, S. C	51.2	WSW.	4,355	20	Sault Ste. Marie, Mich.	88.0	SW.	7,862	6	Milwaukee, Wis.
Central [5]	41.4	SSW.	1,194	6	Detroit, Mich	63.0	WSW.	3,140	30	Evansville, Ind	84.0	WSW.	12,985	28	Dodge City, Kans.
South-Central [6]	41.2	SSW.	1,650	5	Evansville, Ind	52.5	WSW.	5,000	30	Amarillo, Tex	82.0	S.	8,740	10	San Antonio, Tex.
Northwest [7]	38.2	WSW.	2,200	14	Del Rio, Tex	56.0	NNW.	3,670	20	Glasgow, Mont	84.0	NW.	8,229	23	Great Falls, Mont.
West-Central [8]	42.2	WSW.	1,379	5	Havre, Mont	61.0	WNW.	3,047	24	Cheyenne, Wyo	67.0	NW.	5,763	5	Oakland, Calif.
Southwest [9]	36.9	WSW.	2,038	4	Casper, Wyo	58.0	WSW.	4,798	30	Roswell, N. Mex	68.0	WSW.	10,915	31	Tucson, Ariz.
	32.1	NW.	2,367	11	Sandberg, Calif										

[1] Maine, Vermont, New Hampshire, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Pennsylvania, and northern Ohio.
[2] Delaware, Maryland, Virginia, West Virginia, southern Ohio, Kentucky, eastern Tennessee, and North Carolina.
[3] South Carolina, Georgia, Florida, and Alabama.
[4] Michigan, Wisconsin, Minnesota, North Dakota, and South Dakota.
[5] Indiana, Illinois, Iowa, Nebraska, Kansas, and Missouri.
[6] Mississippi, Arkansas, Louisiana, Oklahoma, Texas (except El Paso), and western Tennessee.
[7] Montana, Idaho, Washington, and Oregon.
[8] Wyoming, Colorado, Utah, northern Nevada, and northern California.
[9] Southern California, southern Nevada, Arizona, New Mexico, and extreme west Texas.

RIVER STAGES AND FLOODS FOR JANUARY 1946

By C. R. JORDAN

Precipitation during January averaged above normal in the south-central States from eastern New Mexico and Colorado to Georgia and western Virginia, and in the western Lake Region. Less than half the normal amount was recorded in southern Florida, Pennsylvania, Ohio, and over much of the western half of the country.

Run-off and ground water levels were dominantly high over a great portion of the country. Run-off at a number of representative stations was the greatest of record according to the U. S. Geological Survey. Severely high and damaging floods occurred in the southern states, particularly in Kentucky, Tennessee, and Georgia. The greatest winter floods of record were reported in Iowa, southern Minnesota, and Wisconsin.

Atlantic Slope drainage.—A week of unseasonably warm weather during the period of January 9–14, melted much of the snow cover over the northeastern States and resulted in substantial rises in the streams of this area, with tributary streams reaching flood stage at a few places in New York. However, the river heights reached in most cases were well below flood stage, and no damage was reported.

Most of the coastal streams from the Roanoke River southward reached flood stage one or more times during the month. There were rather general rains over the Southeastern States on January 6 to 9 that raised the streams to moderately high stages, and flood stage was exceeded slightly at numerous places in Virginia, the Carolinas, and Georgia. Moderately heavy rains, or sleet in some cases, again fell over the area on January 16 and 17, prolonging the high stages and causing some streams to exceed flood stage for the second time during the month. The heaviest sleet storm of record was reported over the eastern Piedmont region of North Carolina; a maximum of 10 inches was measured in western Chatham County. The lower reaches of the streams in North and South Carolina persisted above flood stage most of the month. Unusually high stages were reached in the headwaters of the Altamaha River Basin in Georgia.

Eastern Gulf of Mexico drainage.—Scattered floods of record-breaking proportions occurred in many of the streams of the East Gulf States as a result of heavy

rains that fell over the area during the period January 5–10. High stages were prolonged, and in some cases increased, by additional rainfall near the middle of the month.

Floods were severe in the upper Chattahoochee River Basin, exceeding any other floods within the memory of local people in the vicinity of Gainesville, Ga., and reaching the highest stage in 43 years of record at Norcross, Ga. High flood stages were also reached in the Etowah River and in the Coosa River Basin as far downstream as Gadsden, Ala. The previous high-water mark at Canton, Ga., was exceeded slightly, and the crest at Cartersville, Ga., has been exceeded only twice since records were begun.

A series of heavy rains from January 5–9, averaged 5.25 inches over the upper Black Warrior Basin and 6.00 inches over the upper Tombigbee basin, producing substantial rises in both rivers. At Tuscaloosa, Ala., the Black Warrior rose from 17.3 feet on January 5, to 61.1 feet at 11 p. m., January 10, a rise of 44 feet. Rainfall was not so heavy over the southern portions of the watersheds, but it was heavy enough to cause substantial local rises in the lower Tombigbee well ahead of the passage of the flood waters from the upper basin. After the crest passed Tuscaloosa, the Black Warrior at that point subsided slowly and went below flood stage on the 14th. Additional rainfall on January 15–16 checked the fall at Tuscaloosa and started another rise that approached flood stage on January 17; the stream then fell steadily during the remainder of the month. The later rains only slowed up the rate of fall of the upper Tombigbee River, prolonging the period above flood stage. South of Columbus, Miss., the rate of rise was increased slightly, and some of the crest stages were also increased a little.

The heavy rain during the early days of January caused the Pearl River to rise rapidly and exceed flood stage by the 8th. Occasional light to moderate rains thereafter caused the river to rise slowly through the 21st, when it reached 26.8 feet at Jackson, Miss., or nearly 8 feet above flood stage.

Upper Mississippi and Missouri River Basins.—Floods, unusual for so early in the year, were reported in eastern Iowa and adjoining portions of Illinois, Wisconsin, and Minnesota. Winter floods in Iowa are uncommon; the flood of January 5–10 was the greatest one of record for the area. Ice action aggravated the overflow in many streams.

On the Root River at Houston, Minn., ice gorges above the railroad bridges backed up the water for several miles, resulting in stages within a foot of the extreme high water of June 30, 1942. Some damage was also reported in the Kickapoo, Zumbro-Whitewater, La Crosse, and other smaller streams in southern Wisconsin and southeastern Minnesota.

Practically every tributary of the Mississippi River in eastern Iowa went out of its banks as a result of the "January thaw" attended by rainfall that averaged somewhat over an inch. The ground was frozen and run-off was exceptionally high and rapid. Ice action was an important factor and was responsible for many of the most damaging overflows. Flood records were broken for several of the smaller streams. There was some overflow of the Illinois River, and flood stage was exceeded slightly at a few points along the Mississippi River.

High stages were reported in the upper portion of the Grand River, and there was some overflow of the Osage River in Missouri.

Ohio Basin.—Severe and damaging floods occurred in Kentucky, Tennessee, and western North Carolina, and moderate flood stages were reached in the Wabash River Basin.

Moderate to locally heavy rainfall occurred in the headwaters of the Big Sandy and New Rivers during the first week of January. This mountainous section was covered with snow which was melted by the rain and warm temperatures. Streams in the area rose rapidly to near or above flood stage. Flood stage was exceeded at two Weather Bureau stations, Pikeville and Paintsville, Ky., and some property damage resulted.

The rainfall was moderate to heavy over the Green and Barren River basins, and the streams rose rapidly, reaching flood stage at Bowling Green and Woodbury, Ky., on January 9, and at Rumsey, Ky., on the 12th. Moderate overflow resulted.

A light flood was in progress in portions of the upper Wabash River, in the lower West Fork of the White River, and in the main White River as the month opened, resulting from the general thawing which took place during the last few days of December. The principal crests occurred at LaFayette and Covington, Ind., on the 1st and 2d; slight secondary crests, passing flood stage, occurred at these two points on the 10th and 11th, respectively. At Terre Haute and below, the crests were delayed by an ice jam at Covington which began to break up during the afternoon of the 5th.

The Cumberland River flood during the period January 7–25, resulted from heavy rainfall that averaged from 5 to almost 8 inches over the basin. The rate of the rainfall was excessive in many cases, several stations reporting between 4 and 6 inches in a 24-hour period. Record stages were reached in the upper reaches of the Cumberland River.

Tributaries in the upper Tennessee River Basin reached high stages with flooding of some bottom lands. Local flooding occurred in the Tennessee River at Chattanooga, Tenn.

Flood stages were exceeded in the Ohio River from Tell City, Ind., to Cairo, Ill. Stages did not reach seriously high levels and during a normal year would have caused little damage. However, this year there was a considerable amount of corn that had not been harvested because of the shortage of labor and wet weather during the fall and winter, and some loss of corn resulted.

South-central States.—There was light overflow at scattered points throughout Arkansas, Kansas, Missouri, Texas, Louisiana, and Mississippi. Flooding was severe in northern Mississippi. Record stages were exceeded in the headwaters of the Tallahatchie River, and the Yazoo River at Greenwood, Miss., reached a stage of 38.9 feet on January 21, only slightly more than a foot lower than the highest stage of record at that location. Flood stages were reached on the Mississippi River below the mouth of the Ohio.

The Sabine River was above flood stage most of the month, and the lower part of the stream was still out of its banks at the end of the month.

Pacific Slope drainage.—Flood stages were exceeded slightly at a few stations in the Columbia River Basin in Oregon.

FLOOD STAGE REPORT FOR JANUARY 1946

[All dates in January unless otherwise specified]

River and station	Flood stage	Above flood stages—dates		Crest [1]	
		From—	To—	Stage	Date
ST. LAWRENCE DRAINAGE					
Lake Erie	*Feet*			*Feet*	
St. Marys: Decatur, Ind	13	Dec. 30	3	15.6	Dec. 31
ATLANTIC SLOPE DRAINAGE					
Lehigh: Lehighton, Pa	7	8	8	7.8	8
Tioughniogs: Whitney Point, N. Y	12	7	7	12.0	7
Chemung: Chemung, N. Y	12	6	7	14.4	7
Susquehanna: Oneonta, N. Y	12	7	8	12.2	7
James Columbia, Va	10	1	2	11.2	1
		8	13	18.9	9
Roanoke:					
Randolph, Va	21	8	10	23.6	9
Weldon, N. C	31	Dec. 28	3	36.7	1
		9	12	38.2	11
Williamston, N. C	10	Dec. 30	30	11.9	5-6
				11.5	16-17
Tar:					
Rocky Mount, N. C	9	1	3	9.1	2
Tarboro, N. C	18	1	5	19.7	4
Greenville, N. C	13	1	11	14.7	5
Neuse:					
Neuse, N. C	14	Dec. 26	3	17.2	1
Goldsboro, N. C	14	Dec. 31	9	19.2	6
		19	28	15.2	22
Kinston, N. C	14	2	11	16.8	8
		15	17	14.6	16
		23	28	14.2	25
Cape Fear: Lock No. 2, Elizabethtown, N. C	20	Dec. 27	5	29.0	1-2
		22	25	21.7	24
PeeDee:					
Cheraw, S. C	30	Dec. 29	2	34.0	Dec. 31
				22.0	5
Mars Bluff Bridge, S. C	17	Dec. 28	28	19.7	13
				18.9	23
Saluda:					
		Dec. 25	Dec. 31	7.3	Dec. 27
				6.9	Dec. 29
Pelzer, S. C	6			13.2	8
		6	17	6.5	16
		20	20	6.0	20
		7	12	22.3	8
Chappells, S. C	13	15	15	14.2	15
		16	17	15.8	17
Broad: Blairs, S. C	14	Dec. 29	Dec. 31	17.8	Dec. 30
		7	11	23.0	9
Congaree: Columbia, S. C	19	9	9	19.2	9
Catawba:					
Catawba, N. C	8	7	10	10.3	7
Catawba, S. C	11	8	9	14.1	9
Wateree: Camden, S. C	23	9	10	24.2	9
Broad: Carlton, Ga	15	6	8	21.2	7
Savannah:					
Calhoun Falls, S. C	8	7	8	9.4	8
Butler Creek, Ga	21	7	11	24.5	9
Ogeechee: Dover, Ga	7	3	9	7.5	6
		20	29	7.8	22
Ocmulgee:					
Macon, Ga	18	7	10	24.0	9
Hawkinsville, Ga	25	11	13	26.6	12
Abbeville, Ga	11	Dec. 31	7	13.2	2
		11	26	15.5	14
Oconee:					
		7	11	26.2	9
Milledgeville, Ga	20	17	17	20.1	17
Dublin	21	12	14	22.1	13
		2	6	16.7	3
Mt. Vernon, Ga	16	14	19	17.8	16
		23	24	16.1	24
Altamaha:					
Charlotte, Ga	12	1	[2]	17.1	7-8
				20.3	19
Piney Bluff, Ga	17	4	11	18.2	8
		15	30	21.0	19
EAST GULF OF MEXICO DRAINAGE					
Chattahoochee:					
Norcross, Ga	16	7	9	27.7	8
West Point, Ga	19	11	12	19.8	12
Flint: Albany, Ga	20	Dec. 31	1	20.2	1
		13	16	21.6	14
Apalachicola:					
Chattahoochee, Fla	20	11	13	20.3	12
		15	15	20.0	15
Blountstown, Fla	15	Dec. 26	[2]	20.0	Dec. 31
				21.2	13-14, 16
Choctawhatchee: Caryville, Fla	12	9	10	12.2	9
Oostanaula:					
Resaca, Ga	22	8	14	29.7	10-11
Rome, Ga	25	7	17	33.8	9
Etowah:					
Canton, Ga	17	7	9	26.4	7
Cartersville, Ga	18	6	10	30.4	8

See footnotes at end of table.

FLOOD STAGE REPORT FOR JANUARY 1946—Con.

River and station	Flood stage	Above flood stages—dates		Crest [1]	
		From—	To—	Stage	Date
EAST GULF OF MEXICO DRAINAGE—con.					
Coosa:	*Feet*			*Feet*	
Gadsden, Ala	20	8	22	28.9	15
Childersburg, Ala	20	7	18	23.0	7
Cahaba: Centerville, Ala	23	7	8	25.6	7
Alabama:					
Montgomery, Ala	35	7	22	45.1	9
Selma, Ala	45	9	14	47.6	11
Millers Ferry, Ala	40	8	26	49.4	14
Black Warrior:					
Lock No. 10, Tuscaloosa, Ala	47	7	14	61.1	10
Lock No. 7	35	8	25	51.8	14
Tombigbee:					
Aberdeen, Miss	34	8	17	41.8	10
Columbus, Miss	29	10	17	36.0	12
Gainesville, Ala	36	11	28	49.5	18
Lock No. 4, Demopolis, Ala	39	8	[3]	60.0	21-22
Lock No. 3, Ala	33	7	[3]	59.0	23
Lock No. 2, Ala	46	9	[3]	60.2	24
Lock No. 1, Ala	31	9	[3]	40.7	26
Pearl:					
Jackson, Miss	18	8	[3]	26.8	21
Monticello, Miss	15	17	25	15.5	22
Pearl River, La	12	Dec. 28	1	13.6	Dec. 30-31
		8	[3]	14.0	12, 25
MISSISSIPPI SYSTEM					
Upper Mississippi Basin					
Whitewater: Beaver, Minn	7	6	6	8.3	6
Rock: Moline, Ill	10	5	23	13.8	7, 9
Cedar: Waterloo, Iowa	12	6	7	12.8	6
Iowa: Wapello, Iowa	10	7	14	13.7	8
Middle: Indianola, Iowa	15.5	5	6	20.1	5-6
Des Moines:					
Tracy, Iowa	14	5	9	18.9	7
Ottumwa, Iowa	9	6	9	14.2	7
Eddyville, Iowa	15	5	9	21.2	7
Illinois:					
Morris, Ill	13	6	8	15.0	6
		10	11	15.2	10
Peru, Ill	17	6	17	20.9	7
				20.4	11
Peoria, Ill	18	9	19	20.4	13
Havana, Ill	14	7	28	18.6	13
Beardstown, Ill	14	7	28	20.1	14, 15
Mississippi:					
Keithsburg, Ill	12	9	14	13.7	9
Grafton, Ill	18	10	18	21.7	14
Chester, Ill	27	12	15	27.5	13, 14
Cape Girardeau, Mo	32	12	18	33.6	15
Missouri Basin					
Thompson Fork: Trenton, Mo	20	6	6	22.4	6
Grand:					
Chillicothe, Mo	18	5	10	30.5	7
Brunswick, Mo	12	8	12	16.4	10
Osage:					
Osawatomie, Kans	28	6	6	29.3	6
La Cygne, Kans	25	6	8	27.4	7
Trading Post, Kans	24	7	9	24.5	8
Lakeside, Mo	60	13	14	60.0	13, 14
		17	18	60.0	17, 18
Ohio Basin					
Allegheny:					
Lock No. 8, nr. Mosgrove, Pa	24	8	8	24.6	8
Lock No. 5, Schenley, Pa	24	8	8	24.0	8
Levisa Fork:					
Pikeville, Ky	36	8	8	42.9	8
Paintsville, Ky	40	8	9	41.0	9
Kentucky: Lock No. 14, Heidelberg, Ky	30	9	9	31.3	9
Barren: Bowling Green, Ky	28	9	13	36.5	10
Green:					
Lock No. 4, Woodbury, Ky	33	9	15	40.3	12
Lock No. 2, Rumsey, Ky	34	12	20	37.8	16
West Fork:					
Elliston, Ind	18	1	3	19.0	2
				16.5	Dec. 28
Edwardsport, Ind	12	Dec. 26	17	17.3	4
				15.1	12
				15.3	15
White:					
Petersburg, Ind	16	Dec. 28	6	17.3	2-3
Hazleton, Ind	16	Dec. 28	7	17.7	4
Wabash:					
Wabash, Ind	12	Dec. 31	1	14.2	Dec. 31
		Dec. 30	4	16.5	1
LaFayette, Ind	11	6	8	12.6	7
		9	11	12.4	10
Covington, Ind	16	Dec. 31	9	23.8	2
		10	12	16.6	11
Terre Haute, Ind	14	1	14	14.4	3
				16.1	9
Vincennes, Ind	14	12	16	14.6	15
Mt. Carmel, Ill	17	14	16	17.2	15

FLOOD STAGE REPORT FOR JANUARY 1946—Con.

River and station	Flood stage	Above flood stages—dates		Crest [1]	
		From—	To—	Stage	Date
MISSISSIPPI SYSTEM—continued					
***Ohio Basin*—Continued**					
Cumberland:	*Feet*			*Feet*	
Burnside, Ky.	50	7	10	66.4	8
Celina, Tenn.	28	7	17	53.8	12
Carthage, Tenn.	40	8	17	50.8	13
Nashville, Tenn.	40	8	20	48.9	15
Clarksville, Tenn.	46	8	21	54.1	13
Lock F., Eddyville, Ky.	50	9	25	63.4	19
French Broad:					
Asheville, N. C.	6	6	11	8.2	8
Hot Springs, N. C.	13	8	8	15.5	8
Duck: Columbia, Tenn.	32	8	11	45.5	9
Tennessee:					
Chattanooga, Tenn.	30	8	11	35.7	9
		11	13	31.4	12
Pickwick Dam, Tenn.	43	8	19	53.8	13
Ohio:					
Tell City, Ind.	38	14	15	38.7	15
Dam No. 47, Newburgh, Ind.	38	13	18	41.5	16
Dam No. 48, nr. Henderson, Ky.	38	14	18	40.1	16
Mt. Vernon, Ind.	35	14	19	37.8	17
Dam No. 49, Uniontown, Ky.	37	15	20	39.1	17
Shawneetown, Ill.	33	13	22	39.3	18
Dam No. 50, Fords Ferry, Ky.	34	12	24	42.6	17
Dam No. 51, Golconda, Ill.	40	14	22	42.8	18
Paducah, Ky.	39	11	24	45.8	18
Dam No. 52, Brookport, Ill.	37	10	25	47.9	18
Dam No. 53, nr. Mound City, Ill.	42	9	26	53.3	18
Cairo, Ill.	40	9	26	52.0	18
White Basin					
Black:					
Black Rock, Ark.	14	9	23	21.1	10
Poplar Bluff, Mo.	16	11	11	16.7	11
White:					
Calico Rock, Ark.	19	9	10	21.8	9
Batesville, Ark.	23	8	11	23.8	9
Newport, Ark.	26	11	15	27.1	13
Augusta, Ark.	32	12	20	33.2	15
Georgetown, Ark.	21	11	28	24.7	16–17
Des Arc, Ark.	24	12	27	27.2	17
Clarendon, Ark.	26	12	(2)	29.6	20–22
St. Charles, Ark.	25	15	(2)	28.3	24–26
Arkansas Basin					
Neosho: Oswego, Kans.	17	6	8	21.6	7
Petit Jean: Danville, Ark.	20	7	15	24.0	10
Red Basin					
Little Missouri: Boughton, Ark.	20	7	7	20.4	7
		10	11	20.4	10
Saline: Benton, Ark.	20	9	9	23.0	9
Ouachita:					
Arkadelphia, Ark.	17	6	13	19.3	6
				24.3	10
Camden, Ark.	26	7	26	37.4	13
Monroe, La.	40	23	(2)	----	----
Black: Jonesville, La.	50	30	(2)	----	----
Little: Whitecliffs, Ark.	25	10	16	27.2	12
Sulphur:					
Hagansport, Tex.	38	9	13	39.6	10
		16	17	38.2	17
Naples, Tex.	22	10	26	27.2	14
Cypress: Jefferson, Tex.	18	15	20	19.7	16
Red: Alexandria, La.	32	19	22	32.2	21
Lower Mississippi Basin					
St. Francis:					
Fisk, Mo.	20	12	16	21.1	14
St. Francis, Ark.	18	11	24	19.5	16–17

FLOOD STAGE REPORT FOR JANUARY 1946—Con.

River and station	Flood stage	Above flood stages—dates		Crest [1]	
		From—	To—	Stage	Date
MISSISSIPPI SYSTEM—continued					
***Lower Mississippi Basin*—Continued**					
	Feet			*Feet*	
Coldwater: Sarah, Miss.	18	7	21	22.8	9
Tallahatchie: Swan Lake, Miss.	26	7	(2)	31.6	13
Yazoo:					
Greenwood, Miss.	35	14	(2)	38.9	21
Yazoo City, Miss.	29	14	(2)	----	----
Mississippi:					
New Madrid, Mo.	34	11	26	40.5	19–20
Caruthersville, Mo.	32	12	27	39.4	19–20
Memphis, Tenn.	34	18	26	36.1	22
Helena, Ark.	44	23	25	44.2	24
Red River Landing, La.	45	27	Feb. 1	46.0	30
Baton Rouge, La.	35	25	Feb. 3	36.8	31
Plaquemine, La.	31	25	Feb. 3	33.0	Jan. 31–Feb. 1
Donaldsonville, La.	28	27	Feb. 3	29.0	31
Reserve, La.	22	29	Feb. 1	22.2	Jan. 30–Feb. 1
New Orleans, La.	17	29	Feb. 1	17.2	Feb. 1
Atchafalaya Basin					
Atchafalaya:					
Melville, La.	37	28	Feb. 2	37.4	31
Atchafalaya, La.	25	18	(2)	26.8	Jan. 31–Feb. 2
Morgan City, La.	6	5	5	6.0	5
WEST GULF OF MEXICO DRAINAGE					
Nespique Bayou: Basile, La.	22	12	18	23.3	15
Bayou Des Cannes: Eunice, La.	16	11	12	16.4	11
Mermentau: Mermentau, La.	5	11	22	6.2	16
Whiskey Chitto Creek: Mittie, La.	15	9	10	18.6	10
Calcasieu: Kinder, La.	16	10	23	19.9	13
				16.2	22
Sabine:					
Mineola, Tex.	14	1	23	16.8	12
Gladewater, Tex.	26	11	27	32.2	17
Tatum, Tex.	23	21	26	23.6	23
Logansport, La.	25	6	(2)	28.9	12
				28.8	21
Milam, Tex.	30	9	(2)	30.4	18
Bon Wier, Tex.	17	8	(2)	21.0	12
				20.6	21–23
				16.3	15
				16.8	30
Neches: Evadale, Tex.	16	11	(2)	----	----
East Fork: Rockwall (nr.), Tex.	10	16	19	11.8	17
Trinity: Liberty, Tex.	24	16	24	20.2	20
PACIFIC SLOPE DRAINAGE					
Columbia Basin					
McKenzie: Leaburg, Oreg.	12	5	5	12.8	5
		24	24	12.4	24
Santiam: Jefferson, Oreg.	13	Dec. 28	Dec. 31	22.5	Dec. 29
		5	5	13.5	5
		24	25	15.5	24
Willamette:					
		Dec. 28	1	19.7	Dec. 29
Harrisburg, Oreg.	12	4	7	15.2	6
		7	8	12.8	8
		25	25	13.0	25
Albany, Oreg.	20	Dec. 29	1	30.0	Dec. 30
Salem, Oreg.	20	Dec. 29	1	28.4	Dec. 30
Oregon City, Oreg.	12	Dec. 30	3	16.5	Dec. 31–Jan. 1
Columbia: Vancouver, Wash.	15	1	1	15.4	1

[1] Provisional. [2] Continued at end of month.

CLIMATOLOGICAL DATA FOR JANUARY 1946

CONDENSED CLIMATOLOGICAL SUMMARY OF TEMPERATURE AND PRECIPITATION BY SECTIONS

[For description of tables and charts, see REVIEW, January 1943, p. 15]

In the following table are given for the various sections of the climatological service of the Weather Bureau the monthly average temperature and total rainfall; the stations reporting the highest and lowest temperatures, with dates of occurrence; the stations reporting the greatest and least total precipitation; and other data as indicated by the several headings.

The mean temperature for each section, the highest and lowest temperatures, the average precipitation, and the greatest and least monthly amounts are found by using all trustworthy records available.

The mean departures from normal temperatures and precipitation are based only on records from stations that have 10 or more years of observations. Of course, the number of such records is smaller than the total number of stations.

Section	Temperature							Precipitation					
			Monthly extremes							Greatest monthly		Least monthly	
	Section average	Departure from the normal	Station	Highest	Date	Station	Lowest	Date	Section average	Departure from the normal	Station	Amount	Station	Amount
	°F.	°F.		°F.			°F.		In.	In.		In.		In.
Alabama	48.4	+1.9	Dothan	80	8	Valley Head	11	28	8.42	+3.57	Hytop	14.41	Newton	3.68
Arizona	41.0	−.9	2 stations	83	25	Alpine	−13	22	1.25	−.05	Helvetia	4.50	Ehrenberg	.00
Arkansas	41.1	−.1	Cummins, Farm	78	5	Gilbert	5	27	7.44	+3.14	Arkansas City	12.91	Fayetteville Exp. Station.	2.91
California	44.2	−.5	Riverside	88	23	Boca	−10	31	1.42	−3.31	Elk Valley	13.39	10 stations	.00
Colorado	24.3	+.4	Eversoll Ranch	77	25	Taylor Park	−40	27	.49	−.30	Silver Lake	2.40	5 stations	T
Florida	60.8	+1.8	5 stations	87	16	Perry	24	2	2.81	+.03	Crestview	8.79	Fort Myers	35
Georgia	48.5	+1.5	Waycross	84	12	Blairsville	8	2	6.29	+2.02	Dahlonega	14.33	Savannah Airport	2.00
Idaho	24.2	+.2	Swan Falls	60	24	Island Park Dam	−23	12	2.04	−.09	Burke	8.99	Lifton	.20
Illinois	30.3	+2.5	4 stations	65	6	Newton	−10	22	2.16	−.13	Cairo	4.80	Hardin	.38
Indiana	30.8	+1.8	Jeffersonville	72	6	Cartersburg	−18	22	1.57	−1.38	Cypress	3.77	Howe	.65
Iowa	22.8	+4.0	2 stations	61	18	4 stations	−22	11	1.82	+.73	Marshalltown	3.39	Cherokee	.13
Kansas	34.4	+4.4	Ashland	77	25	2 stations	−3	11	1.24	+.54	Oswego	4.98	Hoxie	.01
Kentucky	36.9	+1.2	2 stations	76	6	Clermont	−1	22	4.02	−.31	Burnside	10.06	Oneonta	1.54
Louisiana	51.2	−.3	Baton Rouge	85	4	2 stations	19	23	8.85	+3.93	Winnsboro	14.72	Shriever	3.05
Maryland-Delaware	35.3	+2.1	Cumberland, Md	74	6	Oakland, Md	−16	23	1.69	−1.63	Millsboro, Del	2.99	Edgemont, Md	.90
Michigan	23.1	+2.2	2 stations	63	16	Ironwood	−25	26	2.28	+.33	Detour	4.36	South Haven	.71
Minnesota	11.3	+1.6	Winona	45	4	4 stations	−35	15	.64	−.10	Spring Grove	2.27	2 stations	.08
Mississippi	47.3	+.1	Bay Springs	82	6	2 stations	14	17	9.62	+4.55	2 stations	13.81	Waynesboro	3.39
Missouri	33.8	+2.9	Caruthersville	71	6	Tarkio	−15	1	3.12	+.80	Caruthersville	7.37	Tarkio	.95
Montana	25.3	+5.6	5 stations	61	17	Wolf Point	−32	26	.72	−.19	Summit	4.23	Plevna	T
Nebraska	29.5	+6.2	Curtis	66	18	Walthill	−14	1	.26	−.27	Falls City	1.13	Merriman	.00
Nevada	31.9	+2.2	2 stations	72	18	Fish Creek Ranch	−19	12	.40	−.78	Jarbridge	2.31	2 stations	.00
New England	21.9	−.4	do	61	16	Fort Kent, Maine	−32	15	3.13	−.28	Pinkham Notch, N. H	5.57	Bethlehem, N. H	1.12
New Jersey	32.7	+1.8	do	68	6	2 stations	−5	23	1.76	−1.87	Sussex	3.10	Layton	.46
New York	24.3	+1.4	Stafford	69	6	Stillwater Reservoir	−38	16	1.75	−1.11	Whiteface Mountain	4.84	Barker	.42
North Carolina	42.6	+1.2	Whiteville	81	7	2 stations	0	2	4.56	+.83	Highlands	14.87	Elizabeth City	2.10
North Dakota	11.2	+4.3	Medora	56	4	Pembina	−33	26	.20	−.27	2 stations	.83	12 stations	T
Ohio	31.0	+2.5	2 stations	75	6	Bucyrus	−14	22	1.05	−1.89	Chesapeake	3.03	Bowling Green	.28
Oklahoma	39.1	+.9	Frederick	85	25	Kenton	3	31	2.82	+1.38	Carnasaw Tower	7.01	Guymon	.02
Oregon	32.4	+.6	2 stations	64	14	Chemult	−18	11	4.01	+.24	Valsetz	24.02	Plush	.29
Pennsylvania	29.2	+1.0	2 stations	75	6	Emporium	−27	23	1.36	−1.77	Kregar	2.76	Austinburg	.40
South Carolina	46.9	+1.0	3 stations	81	17	2 stations	12	11	4.21	+.66	Caesars Head	17.32	Walterboro	1.49
South Dakota	22.5	+5.5	Long Valley	67	13	Britton	−27	26	.14	−.41	Deadwood	1.01	Salem	.00
Tennessee	40.0	+1.0	2 stations	78	16	Crossville	0	2	8.46	+3.68	Bolivar	13.93	Greenville	5.03
Texas	46.3	−1.9	Harlingen	91	7	2 stations	0	16	3.65	+1.84	Rockland	11.32	2 stations	T
Utah	23.7	−1.5	Zion National Park	65	24	do	−17	12	.96	−.26	Alta	7.57	3 stations	.00
Virginia	37.5	+1.1	Diamond Springs	76	7	3 stations	−5	23	3.10	−.14	Pennington Gap	8.20	2 stations	1.10
Washington	33.8	+3.2	2 stations	61	17	Stockdill Ranch	−10	30	5.50	+.84	Naselle	21.65	Prosser (near)	.20
West Virginia	34.6	+2.0	Winfield Locks	80	9	Cranberry Glades	−18	23	2.38	−1.17	Kumbrabow State Forest.	5.47	New Cumberland	.73
Wisconsin	18.9	+3.6	Beloit	55	5	Mellen	−31	26	2.01	+.77	West Bend	3.07	Bayfield	1.06
Wyoming	22.9	+3.0	Yoder	64	17	2 stations	−30	12	.54	−.25	Grassy Lake Dam	5.07	7 stations	T
Alaska (December)	8.3	+2.8	Eklutna	49	12	Allakaket	−48	24	1.61	−.87	Little Port Walter	19.55	Eklutna	T
Puerto Rico	73.6	+.5	Juana Diaz	93	25	Utuado	48	25	2.35	−1.05	Rio Blanco (1,800 ft.)	9.43	Santa Isabel	.12

[1] Other dates also.

CLIMATOLOGICAL DATA FOR WEATHER BUREAU STATIONS FOR JANUARY 1946

District and station	Elevation of instruments: Barometer above sea level	Elevation of instruments: Thermometer above ground	Elevation of instruments: Anemometer above ground	Pressure: Station	Pressure: Sea level	Pressure: Departure from normal	Temperature of the air: Mean	Temperature of the air: Departure from normal	Temperature of the air: Maximum	Temperature of the air: Date	Temperature of the air: Mean maximum	Temperature of the air: Minimum	Temperature of the air: Date	Temperature of the air: Mean minimum	Temperature of the air: Greatest daily range	Total degree days	Mean temperature of the dew point	Mean relative humidity	Precipitation: Total	Precipitation: Departure from normal	Precipitation: Greatest in 24 hours	Precipitation: Days with 0.01 inch or more	Wind: Average hourly velocity	Wind: Prevailing direction	Wind: Maximum velocity: Miles per hour	Wind: Maximum velocity: Direction	Wind: Maximum velocity: Date	Clear days	Partly cloudy days	Cloudy days	Average cloudiness, tenths	Total snowfall	Snow, sleet, and ice on ground at end of month	Number of days with thunderstorms
NEW ENGLAND	*Ft.*	*Ft.*	*Ft.*	*Mb.*	*Mb.*	*Mb.*	°F.	°F.	°F.		°F.	°F.		°F.	°F.		°F.	%	*In.*	*In.*	*In.*		*Mi.*								*0–10*	*In.*	*In.*	
Eastport	75	67	85	1,012.5	1,016.3	+0.4	20.8	+.4	55	7	29	−10	16	12	32	1,367	14	74	3.25	−0.2			12.6	nw.	44	s.	25	9	4	18	6.5	23.7	11.8	0
Greenville, Maine	1,070	6	41	974.6	1,016.3		10.1	−2.3	52	7	21	−18	16	−1	42	1,701	7		3.68	+.8	1.70	15		s.				3	16	12		39.3	32.0	0
Portland, Maine [1]	103	5	43	1,013.2	1,016.9	−.7	19.8	−2.6	51	7	30	−18	16	10	38	1,401	15	82	3.74	−.2	1.25	12	9.2	n.	33	w.	13	11	6	14	5.8	21.2	12.0	0
Concord [1]	289	5	45	1,006.8	1,017.6	.0	19.2	+.2	57	6	30	−15	28	8	43	1,420	14	78	3.05	.0	1.00	11	8.1	nw.	34	nw.	19	8	8	15	6.4	28.1	18.7	0
Burlington [1]	403	5	51	1,002.0	1,018.0	+.4	19.2	+.4	54	7	29	−16	20	10	37	1,422	14	80	1.53	−.2	.30	14	12.0	s.	32	s.	6	4	8	19	7.1	17.2	5.0	0
Boston [1]	124	33	62	1,013.5	1,018.3	+.7	28.4	+.5	57	7	36	−3	20	20	27	1,133	19	68	4.18	+.6	1.56	11	12.6	nw.	31	w.	13	8	5	18	6.5	9.7	2.3	0
Nantucket	12	11	59	1,018.0	1,019.0	+1.7	32.9	+1.6	52	6	40	9	20	26	29	994	27	82	3.06	−.7	.89	12	12.8	sw.	34	e.	21	8	5	18	6.7	.8	.0	0
Block Island	26	11	46	1,017.3	1,018.3	.0	32.8	+1.8	52	6	39	5	20	26	30	998	26	74	4.50	+.7	1.54	12	19.0	w.	50	nw.	19	9	6	16	6.3	.2	.0	0
Providence [1]	159	46	60	1,012.9	1,019.0	+1.0	30.0	+2.8	58	6	38	0	20	22	29	1,083	20	73	3.63	−.1	1.53	10	9.2	nw.	36	nw.	19	7	8	16	6.6	4.5	.6	0
Hartford [1]	159	5	44	1,019.6	1,020.0	+1.7	26.4	+.9	51	7	35	0	20	18		1,196	18	73	2.72	−1.2	.89	10	9.2	nw.	39	nw.	19	7	6	18		10.2	8.4	0
New Haven [1]	107	5	39	1,015.6	1,019.6	+1.0	28.8	+1.4	50	10	37	3	20	20	32	1,122	21	72	2.44	−1.2	1.00	9	7.6	w.	25	nw.	19	7	6	18	6.6	3.5	.9	0
MIDDLE ATLANTIC																																		
Albany [1]	97	26	40	1,015.2	1,019.0	+.7	24.2	+4.1	54	6	34	−6	20	15	32	1,265	16	72	.96	−1.4	.35	9	11.0	w.	44	w.	19	6	7	18	6.8	10.0	.6	0
Binghamton [1]	871	60	79	986.1	1,019.3	+.7	27.7	+3.6	58	6	36	−4	20	19	33	1,157	19	76	1.15	−1.3	.46	12	7.7	w.	26	sw.	31	4	6	21	7.3	7.8	.2	0
New York	314	415	454	1,007.8	1,020.3	+1.0	34.0	+3.1	62	6	41	5	20	26	26	963	22	62	1.79	−1.9	.64	8	16.3	nw.	60	nw.	19	7	8	16	6.6	2.5	.0	0
Harrisburg [1]	374	30	49	1,006.4	1,020.7	+1.4	32.4	+3.4	65	6	40	7	23	24	27	1,011	23	70	1.07	−2.0	.51	9	8.6	nw.	40	nw.	19	6	8	17	6.7	2.1	.0	0
Philadelphia [1]	114	5	57	1,016.3	1,020.7	+1.1	35.2	+2.6	65	6	42	11	20	28	25	926	24	72	1.51	−1.8	.44	10	7.6	sw.	23	sw.	31	5	12	14	6.6	1.7	.0	0
Reading	323	47	306	1,008.5	1,021.3		32.9	+1.8	64	7	40	8	20	25	27	993			1.40	−2.2	.60	9	11.7	nw.	50	nw.	19	7	9	15	6.6	2.7	.0	0
Scranton	805	72	104	989.5	1,019.6	+.6	29.6	+3.0	59	6	38	2	20	22	31	1,095			.62	−2.4	.22	9	7.6	sw.	27	nw.	19	7	10	14	6.6	1.8	.0	1
Atlantic City	52	37	172	1,018.6	1,020.7	+1.1	35.5	+3.0	59	7	42	15	23	28	22	916	27	72	2.77	−.7	.52	11	16.4	w.	34	e.	21	4	7	20	7.4	5.1	.0	0
Trenton	190	89	107	1,013.2	1,020.3		33.7	+3.2	65	6	41	8	20	26	26	970	23	68	1.37	−1.9	.38	9	9.7	sw.	26	nw.	19	6	9	16	6.7	2.8	.0	0
Baltimore [2]	123	100	215	1,016.6	1,021.3	+1.3	37.3	+3.5	66	6	44	15	23	30	25	856	26	68	1.66	−1.8	.47	10	10.2	sw.	31	sw.	25	9	11	11	5.8	2.8	.0	0
Washington [2]	112	56	100	1,017.3	1,021.3	+1.0	37.0	+3.6	65	6	44	13	28	30	32	863	26	67	1.54	−2.0	.32	10	7.8	s.	26	nw.	1	6	6	19	6.9	7.3	.0	0
Cape Henry	18	8	54	1,020.3	1,021.0		42.4	+2.2	75	7	49	20	28	35	25	702	34	77	2.78	−.4	.89	11	12.8	n.	41	ne.	17	4	8	19	7.4	3.9	.0	0
Lynchburg [1]	686	4	50	995.6	1,021.0	+.7	37.2	+1.9	63	6	46	7	23	29	30	862	29	76	2.66	−.8	.88	16	9.4	sw.	32	s.	5	5	8	18	7.0	3.7	.0	1
Norfolk [1]	91	80	125	1,018.3	1,021.7	+1.4	43.0	+2.4	74	7	50	22	23	36	23	681	34	78	3.27	+.2	1.46	11	10.5	w.	35	n.	17	2	10	19	7.5	4.4	.0	0
Richmond	144	11	52	1,015.9	1,021.3	+.6	39.0	+1.1	67	7	47	14	23	30	29	809	30	75	2.29	−.9	.73	12	8.4	sw.	24	sw.	6	4	10	17	7.3	6.9	.0	1
SOUTH ATLANTIC																																		
Asheville	2,253	77	92	939.7	1,021.3	+.3	39.4	+4.0	69	9	48	12	2	31	33	795	30	76	4.40	+1.3	1.34	14	10.5	se.	34	e.	5	5	6	20	7.5	3.8	.0	1
Charlotte [2]	779	63	86	992.9	1,021.7	+.7	43.6	+2.4	74	8	51	20	24	36	24	664	34	78	3.40	−.6	.87	15	7.4	sw.	20	nw.	31	5	8	18	7.2	.6	.0	0
Greensboro [1]	886	6	56	988.8	1,021.7		39.7	+1.8	68	8	48	13	24	31	30	787	32	78	3.28	−.3	1.02	17	8.7	sw.	25	ne.	16	7	6	18	6.9	2.2	.0	0
Hatteras	11	5	50	1,020.7	1,021.3	+.6	47.2	+.1	68	8	53	27	2	41	21	552	43	90	4.40	.0	1.55	12	14.5	n.	45	n.	17	7	8	16	6.5	T	.0	0
Raleigh [1]	376	5	69	1,007.8	1,022.0	+1.7	42.3	+1.2	74	7	50	18	23	34	28	705	34	81	3.44	−.2	2.32	12	7.6	sw.	31	sw.	7	5	6	20	7.6	T	.0	0
Wilmington	72	73	107	1,019.0	1,021.7	+1.0	48.6	+2.1	75	10	57	26	28	40	27	517	41	82	3.85	+.6	1.40	11	9.8	n.	31	nw.	31	7	10	14	6.3	.0	.0	0
Charleston [2]	48	11	92	1,020.0	1,021.7	+.7	50.9	+1.0	76	7	59	32	2	43	23	440	42	82	3.63	+.6	1.65	9	10.2	ne.	32	ne.	16	8	12	11	5.9	.0	.0	0
Columbia, S. C. [2]	347	70	91	1,008.8	1,021.3	+.3	48.0	+2.0	75	8	57	20	24	39	30	537	38	74	1.96	−1.5	.88	10	8.7	ne.	25	sw.	9	5	12	14	6.7	T	.0	0
Greenville, S. C. [1]	1,040	18	36	983.1	1,021.0		42.8	+2.5	68	8	51	20	2	35	25	690	35	78	7.37	+2.5	3.95	14	9.0	ne.	34	ne.	16	5	7	19	7.2	T	.0	1
Augusta [2]	182	62	77	1,014.6	1,021.3	.0	49.4	+2.4	76	8	59	23	2	40	30	489	38	71	2.28	−1.6	1.18	9	6.3	nw.	20	s.	5	6	6	19	7.0	.0	.0	0
Savannah [4]	65	73	152	1,019.3	1,022.0	+1.0	53.4	+3.6	77	12	63	26	2	43	29	376	44	80	2.00	−.8	1.04	6	10.6	ne.	33	sw.	31	9	7	15	6.1	.0	.0	0
Jacksonville [2]	43	86	110	1,020.0	1,021.7	+.7	58.7	+3.3	80	8	67	33	2	50	28	237	50	86	2.15	−.6	1.22	7	8.5	ne.	24	w.	24	9	14	8	5.4	.0	.0	0
FLORIDA PENINSULA																																		
Key West [2]	21	10	64	1,018.6	1,019.3	.0	71.4	+1.9	82	16	76	52	19	67	17	18	64	83	.88	−1.1	.37	7	10.3	e.	25	n.	24	11	13	7	5.0	.0	.0	0
Miami [2]	25	242	249	1,019.3	1,020.0	−.3	68.4	+.5	80	16	73	45	18	64	20	51	60	82	.39	−1.9	.18	6	14.1	se.	33	se.	5	9	14	8	5.3	.0	.0	0
Tampa [1]	35	6	43	1,019.6	1,020.7	+.7	62.8	+2.4	82	12	71	41	18	54	28	123	54	83	2.32	− .4	1.26	5	9.9	ne.	33	ne.	22	8	13	10	5.8	.0	.0	1
EAST GULF																																		
Atlanta [1]	1,173	33	72	978.7	1,021.0	.0	44.7	+2.2	73	8	53	20	2	37	30	634	34	70	7.20	+2.2	3.27	16	12.8	nw.	35	e.	16	5	8	18	7.1	.1	.0	1
Macon [2]	370	79	87	1,007.8	1,021.3	.0	49.2	+2.4	76	8	59	22	2	40	30	493	38	70	4.79	+.6	1.84	13	8.0	nw.	27	se.	5	4	5	22	7.7	T	.0	3
Thomasville	273	49	58	1,011.9	1,022.0	+.7	55.7	+4.7	79	8	66	31	18	45	34	307			4.43	+.3	1.32	10						7	9	15		.0	.0	1
Apalachicola	35	11	51	1,019.3	1,020.7		55.7	+2.0	73	12	62	35	18	49	23	293	48	84	5.52	+1.9	2.49	9	9.3	se.	28	n.	31	9	9	13	6.0	.0	.0	1
Pensacola	56	54	79	1,018.6	1,020.7	.0	53.8	+1.3	73	11	61	30	23	46	26	355	44	80	6.01	+2.0	3.11	9	9.1	ne.	27	ne.	31	6	7	18	6.8	.0	.0	1
Anniston	741	9					46.3	+1.7	74	8	56	18	28	37	32	583			11.32	+6.2	3.02	14		nw.				4	6	21		T	.0	2
Birmingham [1]	700	5	62	995.3	1,021.0	−.3	45.0	+2.1	74	8	54	17	28	36	37	618	37	77	8.68		1.39	14	10.1	se.	38	se.	5	6	5	20	7.2	T	.0	3
Mobile [2]	57	86	161	1,018.6	1,020.7	−.3	51.9	+.4	71	11	60	26	23	44	28	410	45	84	5.79	+.9	2.20	14	8.3	n.	26	n.	21	7	3	21	7.3	T	.0	1
Montgomery [2]	218	92	105	1,013.2	1,021.0	−.3	49.6	+1.4	77	8	58	28	28	42	29	487	41	80	6.41	+1.2	2.62	11	8.6	n.	23	se.	5	6	6	19	7.1	.0	.0	4
Meridian [2]	375	67	92	1,007.1	1,021.0	−.3	47.8	+.8	75	7	57	19	23	39	36	539	39	76	7.03	+1.7	2.44	13	7.8	n.	24	w.	24	5	8	18	7.1	.0	.0	2
Vicksburg [2]	247	82	102	1,011.2	1,020.3	−.7	48.0	−.2	79	6	56	25	27	40	30	529	39	82	12.91	+7.5	3.41	15	10.6	n.	35	se.	5	7	3	21	7.3	T	.0	5
New Orleans [4]	53	50	84	1,018.0	1,019.6	−.7	54.2	+1.0	78	7	61	33	23	47	26	353	47	80	5.43	+1.1	1.57	13	8.2	ne.	23	se.	8	8	3	20	6.9	.0	.0	1
WEST GULF																																		
Shreveport [1]	249	5	64	1,010.5	1,019.6	−1.1	46.4	.0	72	3	54	26	17	39	32	572	38	77	11.53	+7.6	4.80	14	10.9	n.	35	sw.	25	6	5	20	7.4	1.2	.0	6
Fort Smith	463	57	82	1,002.4	1,019.0	−1.7	39.7	+.2	68	25	49	15	27	31	37	780	34	81	4.72	+2.2	1.64	10	8.0	ne.	26	nw.	23	8	4	19	7.1	.0	.0	2
Little Rock [1]	357	26	58	1,006.8	1,020.3	−.7	41.7	+.3	69	6	50	17	27	34	31	726	34	76	8.22	+3.5	2.97	15	9.1	n.	33	se.	5	6	7	18	7.2	2.9	.0	5
Austin [1]	605	10	41	997.3	1,019.0		48.6	−.9	77	2	58	26	27	39	32	509	40	74	3.76	+1.7	.94	10	11.1	n.	35	w.	4	12	3	16	6.0	T	.0	3
Brownsville [1]	57	5	54	1,014.9	1,016.9		58.6	−1.2	85	6	68	36	23	50	30	243	52	85	2.75	+.9	1.47	10	12.3	nw.	33	se.	4	6	9	16	6.7	.0	.0	3
Corpus Christi [1]	20	4	33	1,017.6	1,018.6	−.7	54.3	+.3	80	6	63	31	23	45	34	348	47	82	3.66		1.10	15	12.4	n.	43	nw.	4	10	6	15	6.2	.0	.0	2
Dallas [1]	512	5	45	1,000.7	1,019.6		45.5	+.1	78	25	55	18	27	36	35	605	36	74	3.09	+.7	.80	12	10.5	n.	35	sw.	4	8	4	19	6.8	.0	.0	4
Fort Worth [1]	679	40	56	994.6	1,019.3	−.7	45.0	+.6	78	25	54	20	27	36	36	621	37	76	2.79	+.7	.80	11	12.1	n.	54	sw.	4	8	8	15	6.6	.1	.0	2
Galveston [2]	54	106	114	1,016.9	1,019.0	−1.3	53.4	−.4	72	26	58	36	16	48	27	360	48	86	8.12	+4.7	2.06	16	11.3	n.	30	se.	4	8	7	16	6.5	.0	.0	5
Houston [2]	138	157	190	1,013.9	1,019.3		52.2	−.5	78	6	60	34	16	45	27	401	44	80	6.34	+2.6	1.91	14	11.1	n.	34	se.	4	8	4	19	6.8	.0	.0	4
Palestine	510	64	72	1,001.0	1,019.3	−.7	47.8	−.4	73	3	56	26	27	40	31	531	37	70					8.8	n.	25	sw.	25	8	8	15	6.4	T	.0	1
Port Arthur [2]	34	59	134	1,017.6	1,018.6		53.0	−.8	72	6	59	32	17	46	30	381	44	82	8.55	+4.8	2.12	15	14.4	n.	59	sw.	5	8	5	18	6.5	.0	.0	9
San Antonio [1]	693	8	51	993.9	1,019.0	−.3	49.2	−3.1	77	2	59	26	27	39	39	496	40	76	3.64	+2.2	1.10	10	10.1	ne.	44	nw.	4	11	4	16	6.2	T	.0	2
OHIO VALLEY AND TENNESSEE																																		
Chattanooga [1]	762	6	66	993.2	1,021.3	.0	41.7	+2.6	69	7	50	15	23	33	36	724	36	82	10.23	+5.0	2.91	16	7.8	s.	30	se.	5	4	7	20	7.7	.8	.0	2
Knoxville [1]	995	27	53	984.8	1,021.7	+.7	40.2	+2.5	74	9	49	14	2	31	33	768	32	78	8.84	+4.2	3.89	15	7.8	ne.	35	se.	5	6	7	18	7.0	T	.0	2
Memphis [4]	399	5	86	1,005.4	1,020.0	−1.3	41.0	+1.3	71	6	50	11	17	32	35	744	34	80	8.86	+4.0	4.44	12	9.1	n.	27	s.	5	5	9	17	7.2	2.9	.0	4
Nashville [1]	546	5	72	1,000.7	1,020.7	−.6	39.4	+.8	74	6	48	12	27	30	34	793	32	78	8.97	+4.2	4.40	15	9.8	s.	36	se.	5	6	6	19	7.4	4.2	.0	3
Lexington [1]	989	4	28	984.1	1,021.3	+1.0	34.2	+1.3	71	6	44	7	22	25	29	954	27	79	2.87	−1.3	1.28	10		s.				9	3	19	6.7	T	.0	1
Louisville [1]	525	106	120	1,001.0	1,020.7	.0	35.0	+1.6	72	6	44	8	22	26	31	931	28	78	2.52	−1.5	.85	12	9.5	sw.	33	se.	5	9	3	19	6.8	.3	.0	0

See footnotes at end of table.

CLIMATOLOGICAL DATA FOR WEATHER BUREAU STATIONS FOR JANUARY 1946—Continued

District and station	Elevation of instruments: Barometer above sea level	Elevation of instruments: Thermometer above ground	Elevation of instruments: Anemometer above ground	Pressure: Station	Pressure: Sea level	Pressure: Departure from normal	Temperature of the air: Mean	Temperature of the air: Departure from normal	Temperature of the air: Maximum	Temperature of the air: Date	Temperature of the air: Mean maximum	Temperature of the air: Minimum	Temperature of the air: Date	Temperature of the air: Mean minimum	Temperature of the air: Greatest daily range	Total degree days	Mean temperature of the dew point	Mean relative humidity	Precipitation: Total	Precipitation: Departure from normal	Precipitation: Greatest in 24 hours	Precipitation: Days with 0.01 inch or more	Wind: Average hourly velocity	Wind: Prevailing direction	Wind: Maximum velocity: Miles per hour	Wind: Maximum velocity: Direction	Wind: Maximum velocity: Date	Clear days	Partly cloudy days	Cloudy days	Average cloudiness, tenths	Total snowfall	Snow, sleet, and ice on ground at end of month	Number of days with thunderstorms
OHIO VALLEY AND TENNESSEE—Con.	*Ft.*	*Ft.*	*Ft.*	*Mb.*	*Mb.*	*Mb.*	°F.	°F.	°F.		°F	°F.		°F.	°F.		°F.	%	*In.*	*In.*	*In.*		*Mi.*					*0–10*	*In.*	*In.*	
Evansville [1]	431	11	40	1,004.4	1,020.7	.0	34.0	+2.4	65	6	43	5	22	25	33	960	28	80	2.69	−1.0	1.67	11	10.0	s.	31	s.	5	8	5	18	6.6	1.2	.0	0
Indianapolis [1]	823	5	54	988.8	1,020.0	.0	29.0	+1.7	61	6	38	−8	22	20	35	1,115	23	80	1.44	----	.53	11	12.6	w.	40	w.	31	9	3	19	6.8	3.9	T	0
Terre Haute [2]	575	68	149	999.0	1,020.3	----	31.8	+2.0	61	6	40	1	22	24	26	1,034	24	80	2.01	−.7	.71	12	11.4	s.	37	s.	5	9	6	16	6.4	5.1	.0	0
Cincinnati [3]	627	11	51	997.0	1,020.7	+.7	35.6	+5.3	71	6	45	9	22	27	29	910	26	74	1.36	−2.1	.52	8	8.2	w.	26	se.	5	7	6	18	6.7	.8	.0	0
Columbus [3]	822	90	110	989.5	1,020.3	+.7	32.2	+3.6	68	6	40	4	23	24	29	1,016	24	80	.78	−2.3	.21	9	11.9	s.	33	sw.	31	7	7	17	6.8	1.1	T	0
Dayton [1]	1,003	6	55	982.4	1,020.0	----	29.4	+1.7	66	6	38	−4	22	20	30	1,104	24	83	.70	−2.5	.23	9	14.3	s.	38	w.	31	8	3	20	6.9	2.3	T	0
Elkins [1]	1,947	4	45	949.2	1,021.0	+1.0	33.2	+3.2	68	6	44	−2	28	23	43	984	26	83	1.81	−2.0	.65	16	8.8	w.	38	w.	25	4	8	19	7.3	7.4	.0	0
Parkersburg	637	77	84	997.0	1,020.7	+.7	36.0	+3.5	74	6	45	9	23	27	33	898	26	70	2.10	−1.5	1.10	12	7.5	se.	24	sw.	9	7	9	15	6.5	2.7	.0	0
Pittsburgh [1]	842	39	54	988.5	1,020.0	+.4	32.2	+4.0	70	6	41	1	22	23	32	1,016	23	74	1.12	−1.9	.37	14	12.2	s.	38	w.	31	7	5	19	6.8	6.1	T	1
LOWER LAKES							26.8	+3.0										78	1.31	−1.3										7.4			
Buffalo [1]	768	34	96	988.8	1,018.3	.0	27.4	+3.5	61	6	35	−1	19	20	27	1,166	20	77	1.03	−2.3	.42	13	16.7	w.	48	sw.	31	3	8	20	7.8	10.7	T	0
Canton	448	10	61	1,000.3	1,017.6	----	17.8	+1.2	57	6	28	−27	20	7	46	1,463	14	86	2.08	−.4	.54	16	9.9	sw.	29	w.	31	7	5	19	7.3	18.6	12.0	0
Oswego	335	71	85	1,005.4	1,018.3	.0	25.8	+2.2	59	6	34	−9	20	18	31	1,216	18	72	1.95	−1.0	.49	18	12.4	se.	35	w.	19	2	6	23	8.2	20.8	5.7	0
Rochester [1]	523	5	69	998.3	1,018.6	+.3	26.2	+3.0	60	6	34	−7	20	18	32	1,202	18	74	.81	−2.1	.21	15	12.7	sw.	46	sw.	31	1	9	21	8.0	6.7	1.1	0
Syracuse [1]	596	5	57	995.9	1,018.6	+.3	25.4	+2.6	60	6	35	−10	27	16	38	1,228	20	80	2.58	−.1	.65	17	11.8	sw.	41	w.	18	3	7	21	7.7	26.3	2.0	1
Erie [3]	714	57	81	992.2	1,019.0	+.4	30.6	+3.8	64	6	38	7	22	23	29	1,066	23	80	1.11	−1.7	.39	15	10.7	w.	29	sw.	31	4	3	24	7.8	7.8	.4	0
Cleveland [1]	762	27	54	990.2	1,019.3	+.3	29.4	+4.7	66	6	38	−2	22	21	32	1,109	22	74	.79	−1.7	.31	9	13.5	sw.	38	sw.	31	4	8	19	7.2	6.1	T	0
Sandusky	629	5	67	995.3	1,019.3	+.3	30.0	+3.7	67	6	38	0	22	22	32	1,084	----	----	.84	−1.4	.26	11	11.2	sw.	30	w.	31	8	10	13	6.2	3.5	.1	0
Toledo [1]	628	5	47	994.9	1,019.3	+.3	27.9	+3.4	62	6	36	−3	22	20	30	1,151	22	78	.79	−1.4	.40	6	14.0	sw.	40	sw.	30	4	11	16	6.9	3.4	T	0
Fort Wayne [1]	857	5	33	986.5	1,019.0	----	26.4	+1.0	58	6	34	−7	22	18	34	1,197	22	86	1.33	−1.0	.53	8	11.2	w.	34	w.	31	6	5	20	7.0	6.5	T	0
Detroit [1]	730	5	78	990.9	1,018.6	.0	28.1	+4.0	62	6	35	2	22	21	25	1,141	22	77	1.14	−.9	.34	10	12.2	sw.	34	nw.	18	5	5	21	7.7	6.4	T	0
UPPER LAKES							20.8	+3.3										82	2.13	+0.3										7.6			
Alpena	609	5	89	992.9	1,016.3	−1.0	21.7	+2.6	55	6	28	−2	27	16	22	1,337	18	82	2.56	+.7	1.00	16	11.5	nw.	44	nw.	18	0	8	23	8.5	27.6	16.0	0
Escanaba	612	51	72	992.6	1,015.9	−1.7	19.2	+3.8	42	6	27	−9	27	11	31	1,421	14	80	2.09	+.6	.99	14	10.0	nw.	35	nw.	18	7	7	17	6.8	14.9	11.3	0
Grand Rapids [3]	707	70	244	990.9	1,017.6	−.4	27.0	+2.5	57	6	33	7	26	21	26	1,175	20	82	2.73	+.4	.92	14	13.3	s.	51	sw.	6	1	5	25	8.5	19.4	6.4	0
Lansing [3]	878	5	90	984.4	1,118.0	----	25.4	+3.0	55	6	32	1	22	19	25	1,230	19	80	1.65	−.2	.63	11	10.4	sw.	26	sw.	6	2	5	24	8.2	8.0	2.1	0
Marquette	734	44	73	986.8	1,014.9	−2.4	19.6	+3.3	45	5	26	−6	26	15	26	1,408	14	78	2.21	−.1	.45	16	9.6	w.	35	sw.	16	4	5	22	8.1	17.6	17.6	0
Saulte Sainte Marie [1]	614	11	52	991.5	1,015.6	−1.3	16.0	+3.9	43	6	22	−12	1	10	25	1,521	13	87	2.58	+.6	.56	23	11.3	e.	39	nw.	25	1	3	27	8.9	27.0	19.1	0
Chicago [1]	673	5	36	992.9	1,018.6	−.7	26.7	+4.4	53	5	34	−2	27	20	33	1,187	21	81	1.94	.0	.84	13	11.9	s.	35	s.	34	8	7	16	6.7	3.9	.4	1
Green Bay	617	5	32	993.2	1,016.9	−1.1	18.8	+3.1	45	6	27	−14	15	10	37	1,434	14	76	1.89	+.4	1.05	10	8.6	s.	26	s.	6	7	7	17	6.6	8.7	3.8	0
Milwaukee [1]	681	33	66	991.5	1,017.3	−1.3	22.8	+3.4	50	5	30	−9	26	15	35	1,307	18	80	1.97	+.2	.84	10	15.2	s.	52	sw.	5	6	6	19	7.0	3.5	.5	0
Duluth [3]	1,133	5	47	972.6	1,015.9	−3.1	11.3	+3.4	40	11	20	−25	26	3	37	1,662	8	91	1.69	+.7	.75	12	11.7	w.	33	nw.	25	7	10	14	6.5	9.9	10.2	0
NORTH DAKOTA							10.2	+5.6										85	0.21	−0.4										6.6			
Fargo [1]	940	6	47	980.7	1,017.3	−3.4	8.0	+4.2	29	10	18	−27	15	−2	42	1,767	5	88	.32	−.4	.12	9	13.2	s.	37	n.	25	6	11	14	6.4	3.3	5.1	0
Bismarck [1]	1,677	5	43	953.6	1,017.6	−2.7	11.8	+5.8	41	17	26	−23	15	−2	48	1,651	7	85	.07	−.4	.02	5	10.1	nw.	40	n.	23	4	13	14	6.7	1.0	3.4	0
Devils Lake	1,478	11	44	960.4	1,017.6	−2.4	6.0	+4.2	32	4	16	−24	31	−4	33	1,825	2	80	.29	−.2	.09	9	9.4	nw.	30	n.	25	9	7	15	6.4	5.3	9.1	0
Grand Forks [1]	832	4	41	985.1	1,017.6	----	4.4	----	27	10	15	−28	15	−6	37	1,879	2	90	.70	----	.14	13	----	s.	----	----	----	8	7	16	----	6.6	15.4	0
Williston	1,878	42	50	945.8	1,015.6	−4.0	14.9	+8.5	40	22	25	−16	26	5	36	1,549	10	82	.15	−.4	.05	5	7.1	s.	28	nw.	23	5	11	15	6.7	1.5	8.0	0
UPPER MISSISSIPPI							25.4	+4.2										81	2.29	+0.6										6.3			
Minneapolis-St. Paul [1]	919	43	74	981.7	1,016.9	−2.7	15.2	+2.5	39	10	24	−20	26	6	42	1,543	12	84	.94	+.1	.59	7	10.8	se.	33	nw.	28	6	9	16	6.7	4.3	6.2	0
Springfield, Minn.	1,025	4	42	979.0	1,018.3	----	15.1	----	39	29	26	−17	26	5	47	1,546	11	82	.33	----	.14	3	----	nw.	----	----	----	10	8	13	----	2.9	1.2	0
La Crosse [1]	714	5	29	989.8	1,017.3	−2.3	18.6	+4.3	43	5	27	−17	26	10	33	1,436	15	84	1.97	+.9	1.43	7	10.1	s.	28	nw.	25	6	10	15	6.7	4.3	3.7	0
Madison [3]	974	70	78	980.4	1,017.6	−1.7	21.4	+4.7	48	5	29	−12	26	14	39	1,349	18	84	2.25	+.9	.95	12	9.2	nw.	26	sw.	5	7	8	16	6.7	7.5	3.2	0
Charles City	1,015	10	51	980.0	1,018.6	−2.1	18.4	+4.7	43	18	27	−16	26	10	38	1,449	----	----	2.23	+1.2	1.49	8	7.2	nw.	20	nw.	31	13	6	12	5.4	5.3	2.8	0
Moline [1]	606	6	50	995.6	1,019.6	−.4	25.6	+5.4	52	5	34	−4	1	18	37	1,223	20	80	2.53	+1.1	1.11	10	12.5	s.	44	sw.	5	6	9	16	6.6	2.5	.6	0
Des Moines [3]	860	5	99	986.8	1,019.0	−1.7	24.3	+4.2	51	18	34	−7	26	15	41	1,262	18	82	2.58	+1.5	1.38	7	10.4	nw.	31	nw.	30	10	7	14	5.9	7.1	1.1	1
Dubuque	699	60	79	991.5	1,018.3	−1.7	23.4	+4.3	51	18	32	−11	26	15	38	1,292	18	78	2.27	+1.0	1.22	9	6.5	nw.	30	nw.	24	6	14	11	5.9	2.4	.3	0
Burlington [1]	702	4	36	992.6	1,019.3	−1.4	26.0	+3.9	53	5	34	−3	1	18	39	1,207	22	84	2.45	+.7	1.17	8	12.6	s.	38	sw.	5	10	7	14	6.0	.5	T	1
Cairo	357	5	99	1,007.1	1,020.3	−1.0	38.6	+3.7	63	6	45	13	27	32	28	819	----	----	4.80	+1.0	3.39	14	10.3	sw.	32	sw.	25	7	9	15	6.5	.2	.0	1
Peoria [1]	609	6	26	996.3	1,019.3	−.7	27.2	+5.1	55	5	35	−2	27	19	37	1,170	22	80	2.63	+.8	1.19	9	12.2	s.	34	sw.	30	10	7	14	6.2	1.8	.0	2
Springfield, Ill. [3]	636	5	191	995.6	1,019.6	−.7	31.2	+4.7	58	6	39	5	27	24	35	1,049	22	82	1.22	−.9	.75	9	13.6	s.	34	s.	5	9	7	15	6.3	1.2	.0	1
St. Louis [3]	568	35	303	999.3	1,020.7	.0	34.6	+3.5	60	30	43	10	27	27	----	936	----	74	1.59	−.8	.55	10	13.5	s.	43	s.	5	9	6	16	----	3.5	.0	0
MISSOURI VALLEY							28.5	+4.9										77	1.49	+0.4										5.8			
Columbia, Mo. [3]	784	6	66	990.2	1,019.6	−.7	32.8	+1.9	57	5	41	6	1	24	34	998	23	72	2.43	+.5	1.00	7	8.5	s.	26	sw.	23	10	9	12	5.6	.2	.0	1
Kansas City [1]	963	39	76	983.9	1,019.0	−2.0	33.0	+3.8	56	4	41	7	1	25	30	995	24	72	3.40	+2.2	1.92	8	11.7	sw.	34	sw.	30	9	8	14	6.1	.8	.0	1
St. Joseph [3]	967	11	49	983.1	1,019.3	----	30.0	+4.5	53	4	38	3	1	22	32	1,082	24	78	2.35	+1.1	1.16	7	9.1	s.	32	w.	30	17	3	11	4.6	2.6	.0	1
Springfield, Mo. [1]	1,324	5	67	976.5	1,019.6	−1.1	34.6	+2.3	56	25	43	9	27	26	30	942	28	83	2.95	+.6	1.19	8	13.1	s.	36	se.	29	9	4	18	6.7	2.4	.0	1
Topeka	987	65	87	982.7	1,019.6	----	33.4	+5.8	56	4	42	6	26	25	33	981	25	74	1.98	+1.0	.80	8	9.1	s.	28	nw.	23	13	4	14	5.7	2.5	.0	1
Lincoln [3]	1,189	11	81	974.3	1,019.0	−2.0	29.0	+6.2	54	18	38	0	1	20	35	1,113	22	80	.93	+.3	.39	5	9.9	s.	36	nw.	23	10	9	12	5.7	4.0	1.5	0
Omaha [1]	1,105	5	68	977.3	1,019.0	−2.0	26.6	+5.7	57	18	37	−6	1	16	37	1,191	20	80	.59	−.1	.24	5	11.8	s.	38	nw.	23	10	10	11	5.6	4.0	3.0	0
Valentine	2,598	46	54	922.8	1,018.0	−2.0	26.0	+9.1	60	17	43	−4	21	13	42	1,148	17	68	.03	−.4	.02	2	9.4	w.	32	nw.	23	9	15	7	5.2	.5	.0	0
Sioux City [1]	1,138	5	40	975.6	1,018.6	−2.4	22.0	+5.7	48	18	34	−14	1	10	39	1,332	16	79	.14	−.6	.14	1	10.5	nw.	35	nw.	23	9	10	12	6.0	1.4	1.4	0
Huron [1]	1,301	5	41	968.5	1,018.3	−3.0	15.5	+4.2	41	28	29	−17	14	2	45	1,533	12	85	.06	−.5	.04	3	11.6	s.	36	n.	23	6	8	17	6.5	1.1	.5	0
NORTHERN SLOPE							27.8	+7.9										71	0.42	−0.3										6.7			
Billings [1]	3,570	16	40	889.3	1,016.6	----	30.8	+8.4	54	17	40	−1	26	22	33	1,083	22	66	.14	----	.10	4	13.9	sw.	49	nw.	22	1	14	16	7.5	1.5	.2	0
Havre	2,507	11	67	924.5	1,016.3	−3.0	25.5	+12.6	49	22	36	−11	25	15	37	1,226	18	76	.37	−.4	.29	3	10.2	sw.	34	w.	22	8	7	16	6.4	5.6	2.3	0
Helena [1]	4,124	5	43	873.0	1,020.0	−1.0	28.3	+9.6	52	13	39	−16	26	18	44	1,134	18	66	.20	−.4	.15	4	9.2	w.	47	w.	22	2	12	17	7.1	4.1	.8	0
Missoula [1]	3,263	4	32	903.8	1,022.0	----	26.2	+7.6	41	18	34	6	26	18	34	1,205	22	84	.41	−.4	.27	10	5.3	nw.	35	nw.	22	1	4	26	8.4	3.0	1.1	0
Kalispell	2,973	48	56	912.3	1,018.6	−1.4	27.1	+6.7	43	18	34	−1	26	20	28	1,175	24	82	1.07	−.5	.44	13	4.5	w.	23	sw.	22	1	4	26	8.6	16.0	15.0	0
Miles City [1]	2,371	5	78	929.9	1,017.3	−2.7	25.6	----	56	17	37	−15	30	14	44	1,224	20	80	.15	----	.07	4	----	----	----	----	----	3	13	15	7.1	2.3	1.5	0
Rapid City [1]	3,259	5	63	899.4	1,016.6	−2.7	28.7	+8.7	62	17	43	−10	26	15	40	1,128	18	66	.13	−.3	.09	3	14.1	nw.	59	nw.	23	6	14	11	5.9	2.1	T	0
Cheyenne [1]	6,094	5	40	810.0	1,018.0	+.4	28.0	+2.5	58	17	41	−3	21	15	43	1,148	12	51	.31	−.1	.08	7	15.0	nw.	64	nw.	24	6	15	10	6.1	3.6	.0	0
Lander	5,352	60	68	833.7	1,019.6	−.4	24.2	+5.9	54	24	37	0	31	11	40	1,269	13	64	.31	−.2	.29	2	4.8	nw.	35	sw.	24	10	12	9	5.0	5.2	4.7	0
Sheridan [1]	3,790	5	38	882.5	1,018.0	----	27.6	+8.3	62	17	40	−15	26	16	38	1,160	18	72	.95	+.1	.67	7	8.5	sw.	57	nw.	22	4	12	15	6.8	12.8	7.2	0
North Platte [3]	2,821	11	51	916.0	1,018.0	−2.0	31.7	+8.8	59	17	45	5	31	18	41	1,034	20	74	.07	−.3	.06	2	7.7	nw.	35	nw.	23	14	6	11	5.3	1.0	T	0

See footnotes at end of table.

CLIMATOLOGICAL DATA FOR WEATHER BUREAU STATIONS FOR JANUARY 1946—Continued

District and station	Elevation of instruments: Barometer above sea level	Thermometer above ground	Anemometer above ground	Pressure: Station	Sea level	Departure from normal	Temperature of the air: Mean	Departure from normal	Maximum	Date	Mean maximum	Minimum	Date	Mean minimum	Greatest daily range	Total degree days	Mean temperature of the dew point	Mean relative humidity	Precipitation: Total	Departure from normal	Greatest in 24 hours	Days with 0.01 inch or more	Wind: Average hourly velocity	Prevailing direction	Maximum velocity: Miles per hour	Direction	Date	Clear days	Partly cloudy days	Cloudy days	Average cloudiness, tenths	Total snowfall	Snow, sleet, and ice on ground at end of month	Number of days with thunderstorms
MIDDLE SLOPE	*Ft.*	*Ft.*	*Ft.*	*Mb.*	*Mb.*	*Mb.*	°*F.*	°*F.*	°*F.*		°*F.*	°*F.*		°*F.*	°*F.*		°*F.*	%	*In.*	*In.*	*In.*		*Mi.*								*0–10*	*In.*	*In.*	
							35.2	+4.2										68	1.58	+0.8											5.3			
Denver [2]	5,292	106	113	835.8	1,017.3	−.3	34.3	+4.5	62	24	46	5	12	22	43	954	15	52	.45	.0	.22	5	8.2	s.	32	sw.	31	14	11	6	4.5	10.1	.0	0
Pueblo [1]	4,690	5	36	855.7	1,018.6	+1.0	31.3	+2.6	67	24	48	−9	27	15	58	1,042	14	54	.32	.0	.26	4	8.6	nw.	42	w.	22	15	6	10	4.7	6.4	.0	0
Concordia	1,392	50	58	968.2	1,020.0	−.7	32.8	+6.4	60	4	42	7	26	23	33	995	25	77	.58	.0	.29	3	8.3	sw.	29	nw.	23	14	5	12	4.8	2.9	.0	0
Dodge City [1]	2,509	5	58	928.2	1,018.3	−1.3	34.4	+5.4	64	18	47	10	26	21	41	953	23	70	.77	+.4	.63	4	15.5	sw.	43	nw.	30	12	9	10	5.2	2.1	.0	1
Wichita [1]	1,358	6	64	969.2	1,019.0	−1.3	35.2	+3.9	60	4	43	12	26	27	28	930	26	74	2.21	+1.4	.99	7	14.2	s.	39	nw.	23	11	7	13	5.7	.8	.0	1
Oklahoma City [2]	1,214	10	47	974.6	1,019.3	−.3	39.2	+2.8	73	25	48	17	27	31	38	798	30	75	3.31	+2.1	1.66	9	9.2	s.	25	n.	26	9	7	15	6.2	.2	.0	1
Tulsa [1]	674	10	60	994.6	1,019.6	-----	39.0	+3.7	68	25	48	15	27	30	33	806	30	76	3.43	+1.8	2.25	7	11.4	s.	37	ne.	26	9	7	15	6.3	T	.0	1
SOUTHERN SLOPE																																		
							41.4	−0.6										69	1.41	+0.8										5.5			
Abilene [1]	1,738	4	59	956.3	1,018.6	−.4	42.4	−.7	80	25	53	15	22	32	40	698	34	78	1.60	+.6	.61	10	13.2	n.	36	n.	7	9	8	14	6.0	3.0	.0	1
Amarillo [1]	3,676	5	42	889.3	1,018.0	.0	34.7	+1.6	75	25	46	9	16	23	44	937	24	67	1.05	+.5	.81	5	13.9	sw.	38	n.	23	14	7	10	4.9	6.9	.0	1
Del Rio	960	63	71	984.1	1,018.3	+.3	49.9	−2.4	75	6	59	28	27	40	33	467	40	71	1.84	+1.3	.83	8	8.3	nw.	38	nw.	4	12	5	14	5.6	.0	.0	1
Roswell	3,566	75	85	894.0	1,019.0	+1.7	38.4	−.8	78	25	50	7	16	26	46	822	23	60	1.15	+.6	.57	6	7.9	n.	30	nw.	19	10	11	10	5.4	11.6	.0	0
SOUTHERN PLATEAU																																		
							43.1	−0.2										56	0.99	+0.1										4.6			
El Paso [1]	3,778	39	85	887.9	1,018.0	+1.7	41.0	−2.6	70	25	52	20	10	30	37	742	28	63	1.23	+.8	.55	11	10.7	ne.	43	w.	4	12	7	12	5.3	6.0	.0	0
Albuquerque [1]	5,314	5	45	838.5	1,019.3	-----	33.5	−.6	61	25	44	12	31	22	32	979	20	63	.25	−.2	.17	4	9.8	se.	48	e.	11	11	13	7	5.0	3.8	.0	0
Flagstaff	6,907	36	51	789.7	1,020.7	+3.1	28.9	+1.5	60	24	42	−1	10	16	43	1,118	15	57	.96	−1.2	.45	6	----	w.	----	-------	17	6	8	4.2	9.9	.0	0
Phoenix [2]	1,107	39	87	978.3	1,018.3	+1.4	51.3	+.1	77	24	63	30	31	40	38	424	34	60	1.17	+.4	.66	5	6.1	e.	26	e.	13	10	12	9	5.2	.0	.0	0
Tucson [1]	2,555	5	39	927.9	1,017.6	-----	48.0	−1.1	78	25	60	24	31	36	42	526	31	56	2.22	+1.3	1.40	7	----	se.	----	-------	14	7	10	5.1	T	.0	1
Yuma	142	9	54	1,013.2	1,018.3	+.7	56.0	+1.6	81	25	68	36	11	44	35	275	27	36	.07	−.4	.06	2	7.4	n.	30	n.	12	23	6	2	2.8	.0	.0	0
MIDDLE PLATEAU																																		
							29.4	+1.3										69	0.36	−0.6										5.5			
Reno [1]	4,527	20	52	866.6	1,023.7	+3.4	33.6	+2.7	65	23	50	5	29	18	47	974	20	60	.19	+1.4	.10	5	6.8	s.	38	s.	2	12	14	5	4.5	2.0	T	0
Tonopah	6,090	9	20	816.1	1,022.0	-----	30.6	.0	56	23	39	11	12	22	27	1,067	22	68	.22	+.3	.20	2	----	nw.	----	-------	----	14	10	7	----	5.0	.0	0
Winnemucca	4,339	5	56	872.7	1,024.4	+3.1	30.6	+2.0	60	24	42	4	30	19	36	1,068	21	68	.44	−.6	.15	7	8.4	ne.	30	sw.	24	9	7	15	5.9	7.0	.5	0
Modena	5,473	10	46	835.4	1,021.3	+2.0	28.2	+1.5	58	24	42	5	14	15	41	1,140	----	----	----	−.8	.06	1	8.8	w.	25	w.	29	13	12	6	4.4	1.0	.0	0
Salt Lake City [1]	4,227	32	58	871.3	1,024.7	+3.7	27.1	−.4	58	24	37	4	12	18	37	1,172	20	77	1.01	.0	.39	10	8.2	se.	32	nw.	25	8	5	18	6.5	13.3	2.5	0
Grand Junction	4,602	60	68	862.9	1,021.0	+3.0	26.1	+2.1	45	25	37	8	15	15	32	1,204	18	70	.23	−.4	.13	4	4.5	nw.	28	sw.	29	9	6	16	6.1	3.9	.0	0
NORTHERN PLATEAU																																		
							39.3	+3.2										83	1.32	−0.3										7.5			
Baker [2]	3,471	36	54	899.8	1,025.1	+3.8	25.9	+1.0	44	3	35	7	30	17	27	1,211	22	86	.83	−.6	.22	10	5.0	se.	28	sw.	24	5	9	17	7.2	10.0	3.0	0
Boise [1]	2,739	5	49	925.8	1,025.4	+3.0	29.0	+1.1	51	2	37	11	13	21	23	1,114	24	80	1.37	−.4	.48	10	9.4	se.	28	nw.	5	5	9	17	6.8	5.9	1.0	0
Pocatello [1]	4,478	5	31	866.6	1,020.1	+3.4	22.6	+.3	48	24	32	−5	13	13	34	1,319	18	82	.85	−.5	.21	11	9.5	w.	37	w.	24	2	9	20	7.7	5.9	1.4	0
Spokane [1]	1,929	27	42	949.9	1,021.0	+1.0	30.9	+3.4	48	2	37	9	30	24	23	1,061	28	84	1.51	−.6	.42	13	6.1	sw.	30	sw.	22	1	4	26	8.7	6.3	T	0
Walla Walla	991	57	65	985.1	1,022.0	+1.0	39.4	+6.7	56	1	46	20	15	33	25	795	----	----	2.36	+.4	.81	9	5.8	s.	25	se.	7	2	12	17	7.2	1.2	.0	0
Yakima	1,076	58	67	981.4	1,021.3	-----	34.2	+6.8	53	18	42	14	27	27	29	954	----	----	1.00	−.3	.69	7	4.1	nw.	26	sw.	24	2	9	20	7.4	7.8	T.	0
NORTH PACIFIC COAST																																		
							42.1	+1.9										84	6.09	−0.5										8.2			
North Head	211	5	55	1,012.9	1,020.7	+3.1	44.0	+1.9	53	17	48	34	11	40	13	652	40	84	7.9s	−.8	1.44	26	18.2	se	67	s.	3	1	3	27	8.7	T	.0	0
Seattle [2]	125	90	321	1,015.2	1,020.0	+2.4	43.2	+2.4	58	17	48	32	30	39	12	675	38	83	4.45	−.5	1.32	18	10.8	se.	41	sw.	18	3	4	24	8.0	T	.0	0
Tacoma	194	172	201	1,013.2	1,020.3	+3.0	41.8	+3.0	59	17	47	29	13	37	15	721	----	----	6.13	.0	1.40	19	8.8	s.	39	sw.	24	3	7	21	7.8	T	.0	0
Tatoosh Island	86	9	61	1,015.2	1,018.6	+3.4	43.8	+2.6	52	18	47	35	28	40	13	659	39	82	9.79	−2.0	1.65	24	18.8	e.	50	w.	24	3	2	26	8.4	T	.0	0
Medford [1]	1,329	29	58	976.0	1,025.4	-----	36.8	−1.1	56	4	44	21	14	29	27	878	32	84	3.00	+.7	.85	11	----	s.	----	-------	----	2	6	23	7.9	.8	.0	0
Portland, Oreg. [2]	154	68	106	1,017.6	1,023.4	+4.8	42.5	+3.1	56	1	47	28	13	38	18	697	38	89	5.49	−1.1	1.18	22	6.0	se.	21	w.	5	0	7	24	8.5	T	.0	0
Roseburg	510	45	76	1,005.4	1,024.4	+5.1	42.4	+1.2	59	1	49	25	12	35	25	704	38	82	5.77	+.5	1.25	19	3.3	s.	21	sw.	7	0	7	24	8.1	T	.0	0
MIDDLE PACIFIC COAST																																		
							47.3	+0.2										74	2.10	−3.0										5.2			
Eureka	60	72	88	1,023.0	1,025.4	+6.1	46.4	−.5	61	1	54	32	30	39	25	575	41	80	4.32	−2.8	1.37	13	6.8	se.	32	n.	25	6	7	18	6.6	.0	.0	2
Red Bluff	353	5	26	1,010.5	1,023.4	-----	45.6	−.2	66	27	55	27	29	36	32	594	33	64	1.56	−3.2	.73	8	7.9	nw.	30	nw.	28	10	8	13	5.7	.0	.0	1
Sacramento	66	92	115	1,021.0	1,023.4	+3.4	45.8	.0	62	24	54	30	14	37	26	591	38	78	.77	−3.0	.53	4	7.0	n.	26	n.	11	11	13	7	4.8	.0	.0	0
San Francisco [2]	155	112	132	1,017.6	1,023.4	+3.8	51.4	+1.5	62	26	57	41	14	46	17	424	42	76	1.76	−2.8	1.12	4	6.4	n.	26	w.	28	17	8	6	3.6	.0	.0	0
SOUTH PACIFIC COAST																																		
							52.8	+1.5										61	0.43	−1.9										4.3			
Fresno [1]	327	5	34	1,010.8	1,023.4	+4.1	44.4	−1.1	71	24	56	25	30	33	36	640	38	79	.28	−1.4	.24	5	4.1	nw.	29	nw.	5	4	12	15	6.6	.0	.0	0
Los Angeles	338	223	250	1,007.5	1,020.0	+1.4	58.0	+3.4	82	24	68	40	11	48	27	224	32	43	.11	−3.0	.08	3	7.8	ne.	48	n.	12	21	7	3	2.6	.0	.0	0
San Diego [1]	87	20	55	1,016.3	1,019.3	+1.0	56.1	+2.1	79	26	67	38	31	46	33	275	42	62	.89	−1.2	.42	4	5.8	n.	24	nw.	3	17	6	8	3.6	.0	.0	0
ALASKA																																		
Anchorage [1]	132	6	44	997.6	1,002.7	-----	15.8	+4.2	43	20	23	−13	9	8	28	1,538	14	86	.51	−.3	.25	12	4.5	n.	18	w.	2	6	3	22	7.1	9.4	13.5	0
Fairbanks [1]	455	5	63	989.2	1,007.5	-----	−4.6	+6.1	18	20	3	−34	9	−12	31	2,158	−10	80	.70	−.2	.24	11	2.9	nw.	16	n.	1	3	8	20	7.5	8.0	20.3	0
Juneau [1]	80	6	30	1,004.7	1,007.8	-----	30.4	-----	44	2	35	9	29	26	27	1,074	29	89	4.24	----	1.19	21	7.7	e.	30	se.	29	3	1	27	8.3	35.4	8.5	0
Nome	22	25	56	1,000.7	1,001.4	-----	14.6	+11.2	32	25	20	−16	9	9	21	1,559	12	85	1.71	+.6	.68	21	12.6	e.	42	e.	13	3	3	25	8.0	17.1	27.7	0
Bethel	28	5	31	995.6	997.0	-----	14.3	+6.5	39	24	22	−22	6	8	30	1,547	14	92	.82	.0	.17	20	----	----	----	-------	32	----	----	----	8.0	8.2	4.4	0
Cordova	45	5	32	----	1,000.3	-----	26.8	-----	45	2	34	3	7	20	29	1,182	25	91	4.83	----	.70	23	----	----	----	-------	----	0	7	24	8.5	28.6	8.0	0
Gambell	32	5	32	1,000.3	1,001.4	-----	5.6	+2.8	33	24	10	−12	10	1	26	----	----	96	.70	−.1	----	12	23.0	n.	49	n.	2	2	4	25	8.0	6.5	13.8	0
Ketchikan	75	69	90	1,008.8	1,009.8	-----	37.0	+3.4	46	1	41	25	25	33	12	864	33	84	17.53	+3.6	3.56	26	7.8	se.	27	se.	16	1	1	29	8.8	6.8	T	0
Kotzebue	20	5	31	1,005.8	1,006.1	-----	.4	+8.1	23	19	8	−17	19	−7	----	----	−2	87	.10	−.4	----	8	18.0	e.	43	e.	24	6	8	17	7.0	1.7	13.1	0
McGrath	341	5	31	990.5	1,004.1	-----	−.8	-----	24	18	7	−36	8	−9	29	2,033	−1	91	.52	----	----	13	----	nw.	----	-------	----	2	5	24	8.3	9.6	21.3	0
HAWAII																																		
Honolulu	38	86	100	1,014.9	1,016.3	-----	73.1	+2.2	81	4	77	64	27	69	12	0	----	----	6.30	+2.5	2.99	14	8.7	ne.	27	ne.	23	9	10	12	5.8	.0	.0	3
Honolulu (Dec.)	38	86	100	1,014.6	1,015.2	-----	73.5	+1.1	81	8	78	64	17	69	13	0	----	----	1.48	−2.5	.74	9	8.0	ne.	38	ne.	9	9	8	14	6.1	.0	.0	2

[1] Data are airport records.
[2] Barometric data (adjusted to old city elevation) and hygrometric data from airport; otherwise city office records.
[3] Observations taken hihourly.
[4] Pressure (adjusted to old city elevation), temperature, and hygrometric data from airport; otherwise city office records.
[5] Temperature and precipitation from city records, other data from airport.

NOTE.—Except as indicated by notes [1], [2], [4], and [5] data in table are city office records.

SEVERE LOCAL STORMS FOR JANUARY 1946

[The table herewith contains such data as has been received concerning severe local storms that occurred during the month. A revised list of tornadoes will appear in the UNITED STATES METEOROLOGICAL YEARBOOK]

Place	Date	Time	Width of path, yards	Loss of life	Value of property destroyed	Character of storm	Remarks
	Jan. 1946						
Anderson, Angelina, Nacogdoches, Leon and Hunt Counties, Tex.	4			33	$2,600,000	Tornadoes	300 persons injured; 184 homes destroyed, 200 others damaged; 400 other buildings destroyed and 317 damaged.
Coila and Seven Pines, Miss.	4			2		Tornado	Mother and child killed; 5 persons injured. From Coila the tornado passed through Seven Pines, where it destroyed nearly every building.
Chicot County, Ark.	6	6 p. m.	880	3	50,000	Small tornado	About 45 buildings demolished and 50 houses damaged; 50 persons injured; some farm animals killed; path 4 to 5 miles long.
Barton, Reno, and Kingman Counties, Kans.	30	4:30 a. m.			25,000	Wind	Wind velocity of 50 miles per hour was reported at Hutchinson Municipal Airport. Storm struck Great Bend and Lyons about the same time, causing major damage to airplanes parked in hangars at these places. Other property damage included buildings, trees, and windows, over a considerable area. Chief loss in planes.

SOLAR RADIATION AND SUNSPOT DATA FOR JANUARY 1946

[Solar Radiation Investigation Section, I. F. HAND, in charge]

Explanations of the tables and references to descriptions of instruments, stations, and methods of observation, and to summaries of data, are given in the January 1944 MONTHLY WEATHER REVIEW, page 43. A list of the pyrheliometric stations is given on page 45 of the same REVIEW.

SOLAR RADIATION OBSERVATIONS

TABLE 1.—*Solar radiation intensities during January 1946*

[GRAM CALORIES PER MINUTE PER SQUARE CENTIMETER OF NORMAL SURFACE]

Date	Sun's zenith distance										
	7:30 a. m.	78.7°	75.7°	70.7°	60.0°	0.0°	60.0°	70.7°	75.7°	78.7°	1:30 p. m.
	75th mer. time	Air mass									75th mer. time
		A. M.				*1.0	P. M.				
	e	5.0	4.0	3.0	2.0		2.0	3.0	4.0	5.0	e
MADISON, WIS.											
	mb.	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*mb.*
Jan. 13	1.2	0.87	1.01	1.11	1.22	1.34					1.2
Jan. 15	1.8	.90	1.06	1.19	1.43	1.64	1.43	1.25			2.0
Jan. 16	1.7	.61	.79	1.01	1.05	1.10					3.3
Jan. 17	3.0	.86	1.02	1.14	1.30	1.49					4.0
Jan. 19	1.6	.80	.92	1.10	1.32	1.59					2.2
Jan. 21	1.0	.69	1.02	1.16	1.30	1.47					1.1
Jan. 22	0.7	.77	1.01	1.11	1.22	1.34					1.4
Means		.79	.98	1.12	1.26	1.42	(1.43)	(1.25)			
Departures		−.12	−.05	−.06	−.09	−.11	+.01	+.10			
LINCOLN, NEBR.											
Jan. 7	3.8	0.79	0.92	1.00				1.24	1.16	1.09	4.0
Jan. 10	3.0	.92	1.02	1.20				1.22	1.11	.98	4.6
Jan. 12	2.2	1.00	1.15	1.27							2.6
Jan. 15	1.7	.96	1.09	1.20				1.05	.92	.89	2.3
Jan. 16	2.6	.85	.98	1.11				1.11	.96	.81	3.7
Jan. 21	2.1	1.04	1.15	1.27				1.24	1.13	1.04	1.8
Jan. 24	2.9	.99	1.12	1.24							3.7
Jan. 25	5.3						1.31	1.20	1.04	.92	4.2
Jan. 28	3.2			1.22	1.38		1.36	.85			3.5
Jan. 29	3.8	.68	.79	.92	1.18						5.8
Jan. 31	1.4	.85	.96	1.13	1.33		1.24	1.09			2.7
Means		.90	1.02	1.16	1.30		1.30	1.12	1.05	.96	
Departures		−.02	−.03	−.03	−.09		−.10	−.07	.00	+.02	
ALBUQUERQUE, N. MEX.											
Jan. 1	2.0	1.01	1.11	1.19	1.35			1.20	1.07	0.95	3.3
Jan. 2	2.7	1.00	1.12	1.22	1.37				1.11	.94	2.9
Jan. 7	2.0	1.03	1.12	1.24	1.40		1.37	1.29	1.22	1.12	2.3
Jan. 8	1.9	1.01	1.11	1.24	1.38		1.39	1.25	1.15	1.06	2.0
Jan. 11	2.4		1.14	1.19	1.39						2.5
Jan. 12	2.6		1.11	1.22							3.6
Jan. 13	1.7	1.04		1.23							2.5
Jan. 16							1.37	1.25		1.01	4.4
Jan. 19	3.3						1.26	1.08		.88	3.6
Jan. 20	2.7	.93	1.04		1.32						3.8

SOLAR RADIATION OBSERVATIONS—Continued

TABLE 1.—*Solar radiation intensites during January 1946*—Con.

[GRAM CALORIES PER MINUTE PER SQUARE CENTIMETER OF NORMAL SURFACE]

Date	Sun's zenith distance										
	7:30 a. m.	78.7°	75.7°	70.7°	60.0°	0.0°	60.0°	70.7°	75.7°	78.7°	1:30 p. m.
	75th mer. time	Air mass									75th mer. time
		A. M.				*1.0	P. M.				
	e	5.0	4.0	3.0	2.0		2.0	3.0	4.0	5.0	e
ALBUQUERQUE, N. MEX.—Continued											
	mb.	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*mb.*
Jan. 21	2.3				1.26					.90	2.6
Jan. 22	2.1				1.42						2.5
Jan. 23	2.0	1.08		1.26	1.36		1.37				2.5
Jan. 24	2.3	1.08	1.16	1.24	1.19		1.37	1.20	1.11	1.01	3.6
Jan. 25	3.4	1.03			1.41		1.41	1.30	1.20	1.14	4.2
Jan. 26	2.7	1.12	1.23	1.34	1.45		1.52	1.38	1.26	1.14	2.6
Jan. 28	1.4	1.10	1.18	1.30	1.40						2.1
Jan. 29	2.7						1.37				1.7
Jan. 30	1.2			1.24	1.34				1.19	1.10	2.7
Jan. 31	1.0				1.26		1.40	1.25	1.11		1.4
Means		1.04	1.13	1.24	1.35		1.38	1.24	1.16	1.02	
Departures		+.01	.00	−.01	−.03		−.06	−.03	−.02	−.06	
BLUE HILL, MASS.											
Jan. 1	3.2	0.72	0.82	1.04	1.27			1.03	.84	.68	3.0
Jan. 2	1.4	1.10	1.19	1.31	1.45			1.29	1.20	1.11	1.7
Jan. 3	1.7	.96	1.04	1.18	1.30			.96	.78	.63	2.2
Jan. 4	3.3								.80	.68	5.2
Jan. 10	8.0		.84					1.17	.96	.84	6.2
Jan. 11	3.6	.99	1.09		1.44						3.5
Jan. 13	3.6	.93	1.08					1.30	1.19	1.11	2.0
Jan. 14	1.2		1.15	1.23							1.7
Jan. 19	1.7		.93				1.33		1.13	1.02	1.5
Jan. 23	1.6	1.08	1.18	1.29			1.41	1.20	1.10	.99	2.1
Jan. 27	0.9						1.47	1.30	1.21	1.11	0.9
Jan. 29	2.5	.61	.98				1.40	1.28	1.13	1.05	1.9
Means		.91	1.03	1.21	1.36		1.40	1.19	1.03	.92	
Departures		−.03	−.01	+.06	+.03		+.07	+.02	−.01	−.01	
BOSTON, MASS.											
Jan. 2	1.8		1.16	1.15					1.10	1.01	1.7
Jan. 3	2.1	0.95	.89	.94				0.91	.57		2.5
Jan. 14	1.1			.91							1.6
Jan. 16	0.9	.76	1.08	1.18				1.08	.99	.80	1.2
Jan. 23	1.9		.96	1.05							2.5
Jan. 29	2.9	.73									3.0
Means		.81	1.02	1.05				(1.00)	.89	(.90)	
Departures		+.02	+.18	+.05				−.01	−.01	+.09	
RATIO, BOSTON/BLUE HILL, ON COMPARABLE DATES											
		(1.08)	0.88	0.81				(0.95)	(0.85)	(0.91)	

*Extrapolated.

TABLE 2.—*Daily totals and weekly means of solar radiation (direct + diffuse) received on a horizontal surface*

[Gram calories per square centimeter]

Date	Washington, D. C.	Madison, Wis.	Lincoln, Nebr.	East Lansing, Mich.	New York, N. Y.	Fresno, Calif.	Fairbanks, Alaska	Columbia, Mo.	Boston, Mass.	Nashville, Tenn.	Twin Falls, Idaho	La Jolla, Calif.	Riverside, Calif.	Blue Hill, Mass.	Newport, R. I.	State College, Pa.	Davis, Calif.	Boulder, Colo.	Tooele, Utah	New Orleans, La.	Toronto, Canada
1946	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*
Jan. 1	142	175	199	139	99	144	.....	259	182	115	176	254	254	202	93	196	183	129	224	330	151
Jan. 2	226	78	198	98	207	131	.....	171	201	58	133	127	107	233	244	162	119	200	140	312	92
Jan. 3	197	147	214	30	102	213	.....	97	170	13	59	227	188	209	206	125	265	212	35	295	46
Jan. 4	139	32	28	38	67	81	.....	48	155	193	46	179	175	197	186	58	62	251	58	163	22
Jan. 5	77	11	89	61	123	198	.....	47	157	54	86	168	139	190	194	203	320	122	75	136	95
Jan. 6	39	170	200	48	37	185	.....	167	56	222	192	297	314	88	94	71	284	125	261	104	111
Jan. 7	28	31	211	19	17	143	.....	68	14	20	39	208	294	17	18	41	196	216	118	104	126
Means	121	92	163	62	93	156	.....	123	134	96	104	217	210	162	148	122	204	179	130	206	92
Departures	−42	−36	−4	−18	−23	+13	.....	−1	+24	−3	−43	−28	−36	+20	+4	+13	+44	−12	−91	+27	.....
Jan. 8	20	40	21	76	166	125	.....	25	144	47	154	276	314	172	168	100	344	122	303	92	25
Jan. 9	8	81	42	4	23	238	.....	86	39	35	178	300	319	50	43	17	326	117	352	322	18
Jan. 10	218	155	224	52	226	255	.....	33	185	24	98	281	250	197	221	88	302	258	304	30	15
Jan. 11	71	37	27	29	130	116	.....	51	185	15	218	278	308	208	196	88	351	19	303	180	42
Jan. 12	174	140	248	17	111	193	.....	280	32	25	241	286	314	32	40	30	341	65	344	101	32
Jan. 13	136	203	248	178	175	190	.....	310	220	242	248	293	320	211	218	96	319	261	336	149	142
Jan. 14	260	134	214	113	116	219	.....	270	156	207	227	300	296	193	159	196	291	264	352	53	16
Means	126	113	146	67	135	195	.....	151	137	85	195	288	303	152	149	88	325	158	328	132	41
Departures	−26	−22	−36	−35	+10	+37	.....	+4	+21	−47	+39	+29	+50	−6	−13	−46	+123	−40	+66	−76	.....
Jan. 15	56	252	229	213	68	206	.....	197	42	170	230	277	255	70	91	105	254	274	364	58	200
Jan. 16	220	214	242	214	218	236	.....	303	214	30	223	268	307	259	250	256	318	201	327	82	95
Jan. 17	254	210	273	121	63	144	.....	261	93	206	227	178	233	129	80	201	192	276	360	256	88
Jan. 18	226	235	218	153	89	170	.....	249	86	255	185	276	294	95	180	87	254	171	193	245	51
Jan. 19	209	98	27	158	245	175	.....	101	208	58	227	196	203	251	261	239	197	212	289	97	194
Jan. 20	44	172	122	43	134	113	.....	27	142	46	123	279	315	172	215	77	298	171	198	257	100
Jan. 21	89	248	273	155	24	259	.....	252	20	95	149	323	330	41	30	79	256	307	208	284	24
Means	157	204	198	151	120	186	.....	190	115	123	195	257	277	145	160	140	253	230	277	187	108
Departures	−1	+51	+13	+29	−5	+2	.....	+33	−13	−35	+20	−4	−4	−16	−8	+1	+20	+18	+17	−60	.....
Jan. 22	124	246	207	126	86	256	.....	318	112	275	98	311	331	113	62	262	303	148	84	263	214
Jan. 23	228	207	83	195	128	279	(T)	72	202	280	196	311	317	277	272	273	335	286	254	286	154
Jan. 24	144	214	257	27	66	262	35	320	122	32	68	311	323	148	90	139	274	194	66	409	64
Jan. 25	232	108	212	46	200	199	10	193	145	259	253	304	325	154	123	183	359	186	84	372	73
Jan. 26	154	270	282	167	48	140	26	239	91	16	254	304	323	112	94	197	388	300	277	189	231
Jan. 27	302	217	211	213	217	168	12	332	217	291	292	322	349	277	234	231	375	316	195	348	172
Jan. 28	276	253	285	67	197	202	36	333	150	283	253	313	347	209	211	241	296	316	234	294	115
Means	209	216	220	120	134	215	.....	258	150	205	202	311	331	184	155	218	333	250	170	300	146
Departures	+32	+35	−1	−8	−22	+8	.....	+63	−9	+28	+22	+41	+81	+3	−19	+68	+117	+23	−68	+74	.....
ACCUMULATED DEPARTURES ON JANUARY 28, 1946																					
	−259	+196	−196	−224	−280	+420	.....	+693	+161	−399	+266	+266	+637	+7	−252	+252	+2,128	−77	−532	−245	.....

T indicates a trace of solar radiation.

ADDITIONAL DATA FOR BOULDER, COLO., DECEMBER 1945

Date	Mean	Departure
Dec. 3–9	227	+23
Dec. 10–16	207	+1
Dec. 17–23	196	+3
Dec. 24–31	162	−27

POSITIONS, AREAS, AND COUNTS OF SUNSPOTS FOR JANUARY 1946

By LUCY T. DAY

[Equatorial Division, U. S. Naval Observatory]

[Communicated by Commodore J. F. Hellweg, U. S. N. (Ret.) Superintendent, U. S. Naval Observatory.] All measurements and spot counts were made at the Naval Observatory from plates taken at the observatories indicated. Difference in longitude is measured from the central meridian, positive toward the west. Latitude is positive toward the north. Areas are corrected for foreshortening and expressed in millionths of Sun's hemisphere. For each day, under Mount Wilson group number, longitude, latitude, area of spot or group, and spot count, are included respectively, number of groups, assumed longitude of center of the disk, assumed latitude of center of the disk, total areas of spots and groups, and total spot count.

Date	Eastern standard time	Mount Wilson group No.	Heliographic: Difference in longitude	Heliographic: Longitude	Heliographic: Latitude	Heliographic: Distance from center of disk	Area of spot or group	Spot count	Plate quality	Observatory
1946	h m		°	°	°	°				
Jan. 1	10 55	7925	−79	320	−29	79	12	1	G	Mt. Wilson.
		7923	−59	340	−15	60	36	1		
		7923	−52	347	−15	53	36	4		
		7922	+30	69	−19	33	194	1		
		7924	+56	95	+17	60	121	18		
		(4)		(39)	(−3)		399	25		
2	11 4	7925	−67	319	−28	69	48	1	F	U. S. Naval.
		7923	−46	340	−13	47	73	3		
		7923	−38	348	−13	40	48	5		
		7922	+43	69	−18	45	194	1		
		7924	+68	94	+18	70	48	1		
		(4)		(26)	(−3)		411	11		
3	11 19	7925	−57	315	−30	61	24	1	G	Do.
		7925	−52	320	−29	57	48	1		
		7923	−33	339	−15	35	24	1		
		7923	−25	347	−15	28	6	1		
		7922	+56	68	−17	57	194	1		
		7924	+80	92	+17	80	48	1		
		(4)		(12)	(−3)		344	6		
4	11 58	7925	−44	315	−30	50	48	1	F	Do.
		7925	−42	317	−29	47	73	3		
		7925	−36	323	−29	43	48	1		
		7923	−19	340	−13	21	12	1		
		7922	+68	67	−17	68	145	2		
		(3)		(359)	(−3)		326	8		
5	14 53	7925	−30	314	−30	39	24	1	F	Do.
		7925	−25	319	−29	34	12	1		
		7925	−23	321	−28	33	12	1		
		7925	−22	322	−31	34	16	2		
		7925	−20	324	−29	32	48	1		
		7922	+81	65	−18	81	145	1		
		(2)		(344)	(−4)		257	7		
6	14 21	7925	−6	325	−30	27	73	1	P	Mt. Wilson.
		(1)		(331)	(−4)		73	1		
7	11 11	7925	+1	321	−30	26	12	2	G	Do.
		7925	+6	326	−30	27	48	1		
		(1)		(320)	(−4)		60	3		
8	12 7	7926	+9	315	−24	23	12	1	P	Do.
		7926	+13	319	−24	24	24	3		
		7925	+19	325	−30	31	36	1		
		(2)		(306)	(−4)		72	5		
9	11 10	7927	−13	281	−32	31	12	1	P	Do.
		7927	−12	282	−30	28	24	1		
		7925	+31	325	−31	41	16	1		
		(2)		(294)	(−4)		52	3		
10	11 21	7929	−70	210	+21	72	145	1	F	U. S. Naval.
		7928	−30	250	+20	38	48	2		
		7927	−1	279	−32	28	6	2		
		7925	+38	318	−30	45	24	4		
		7925	+43	323	−31	50	24	4		
		(4)		(280)	(−4)		247	13		
11	11 29	7929	−56	211	+21	60	145	1	F	Mt. Wilson.
		7928	−18	249	+19	28	61	4		
		7928	−12	255	+19	25	12	1		
		7930	+7	274	−7	7	48	1		
		7930	+7	274	−9	8	24	1		
		(3)		(267)	(−4)		290	5		

See footnotes at end of table.

POSITIONS, AREAS, AND COUNTS OF SUNSPOTS FOR JANUARY 1946—Continued

Date	Eastern standard time	Mount Wilson group No.	Heliographic: Difference in longitude	Heliographic: Longitude	Heliographic: Latitude	Heliographic: Distance from center of disk	Area of spot or group	Spot count	Plate quality	Observatory
1946	h m		°	°	°	°				
Jan. 12	10 52	7929	−42	212	+21	48	145	1	F	U. S. Naval.
		7929	−33	221	+25	43	12	1		
		7928	+2	256	+19	23	48	2		
		7928	+5	259	+20	24	24	1		
		7925	+70	324	−31	70	6	1		
		(3)		(254)	(−4)		235	6		
13	11 51	7936	−79	162	+22	79	194	1	F	Do.
		7935	−77	164	−18	77	194	1		
		7934	−65	176	+17	68	12	2		
		7933	−52	189	+20	56	121	3		
		7933	−49	192	+22	54	61	2		
		7932	−32	209	−37	45	73	3		
		7929	−28	213	+22	38	73	1		
		7931	−3	238	+31	35	145	3		
		7931	+1	242	+29	32	73	2		
		7928	+18	259	+19	28	12	1		
		(8)		(241)	(−4)		958	19		
14	11 39	7935	−70	157	−19	70	6	1	F	Do.
		7935	−68	159	−15	68	6	1		
		7935	−65	162	−18	65	145	1		
		7936	−65	162	+22	69	194	1		
		7934	−51	176	+17	55	24	1		
		7933	−40	187	+19	46	315	24		
		7933	−35	192	+20	42	97	1		
		7932	−19	208	−36	39	48	1		
		7929	−15	212	+21	29	73	2		
		7931	+8	235	+31	36	267	10		
		7931	+8	235	+27	32	48	1		
		7931	+11	238	+29	33	73	5		
		7931	+15	242	+28	35	194	1		
		(7)		(227)	(−4)		1,490	50		
15	12 24	7935	−54	160	−17	56	12	2	VG	Mt. Wilson.
		7935	−52	162	−18	54	145	1		
		7936	−51	163	+22	57	170	1		
		7934	−37	177	+16	42	12	1		
		7933	−27	187	+17	35	533	16		
		7938	−25	189	−15	26	12	7		
		7933	−20	194	+18	30	436	12		
		7932	−3	211	−38	33	6	2		
		7929	−1	213	+20	25	48	2		
		7937	+18	232	−38	37	6	1		
		7937	+19	233	−36	36	12	3		
		7931	+21	235	+32	42	485	30		
		7931	+25	239	+29	41	242	29		
		7931	+30	244	+29	45	194	1		
		(9)		(214)	(−5)		2,313	108		
16	10 59	7935	−38	163	−18	40	97	1	F	U. S. Naval.
		7936	−37	164	+22	46	109	1		
		7934	−25	176	+16	32	48	2		
		7934	−22	179	+16	30	73	3		
		7933	−13	188	+17	26	485	1		
		7933	−10	191	+18	25	97	5		
		7933	−5	196	+20	26	485	1		
		7929	+11	212	+21	28	48	1		
		7931	+32	233	+32	48	242	7		
		7931	+37	238	+27	49	97	3		
		7931	+40	241	+28	51	339	7		
		(6)		(201)	(−5)		2,120	32		
17	10 52	7935	−25	163	−18	28	97	1	G	Do.
		7936	−25	163	+21	37	121	1		
		7934	−15	173	+14	24	73	6		
		7934	−10	178	+13	21	109	1		
		7933	−2	186	+18	23	509	5		
		7933	+5	193	+20	25	485	1		
		7929	+23	211	+21	36	24	1		
		7931	+43	231	+32	55	291	15		
		7931	+50	238	+30	59	339	10		
		(6)		(188)	(−5)		2,048	41		
18	10 49	7936	−11	164	+22	29	145	1	F	Do.
		7935	−11	164	−18	18	121	1		
		7934	0	175	+14	19	61	4		
		7934	+4	179	+13	19	97	2		
		7933	+10	185	+18	25	388	8		
		7933	+20	195	+20	32	533	1		
		7931	+57	232	+32	65	194	5		
		7931	+64	239	+30	71	242	2		
		(5)		(175)	(−5)		1,781	24		

POSITIONS, AREAS, AND COUNTS OF SUNSPOTS FOR JANUARY 1946—Continued

Date	Eastern standard time	Mount Wilson group No.	Heliographic				Area of spot or group	Spot count	Plate quality	Observatory
			Difference in longitude	Longitude	Latitude	Distance from center of disk				
1946	h m		°	°	°	°				
Jan. 19	10 24	7935	+1	163	−18	13	145	1	G	U. S. Naval.
		7936	+1	163	+22	27	121	1		
		7934	+12	174	+14	21	48	5		
		7934	+17	179	+13	24	121	3		
		7933	+23	185	+17	31	388	9		
		7933	+33	195	+20	41	485	1		
		7931	+78	240	+30	81	291	1		
		(5)		(162)	(−5)		1,599	21		
20	10 59	7939	−79	70	−15	80	388	1	P	Mt. Wilson.
		7935	+14	163	−18	19	97	1		
		7936	+14	163	+22	30	145	1		
		7934	+26	175	+14	32	48	4		
		7934	+32	181	+13	37	97	1		
		7933	+37	186	+17	42	339	1		
		7933	+41	190	+18	48	24	2		
		7933	+48	197	+19	51	291	1		
		(5)		(149)	(−5)		1,429	12		
21	14 6	7939	−73	61	−15	74	339	3	G	U. S. Naval.
		7939	−67	67	−14	67	242	2		
		7939	−66	68	−11	66	48	1		
		7939	−65	69	−13	65	485	1		
		7935	+30	164	−18	32	73	1		
		7936	+30	164	+22	40	109	1		
		7934	+48	182	+13	51	61	1		
		7933	+53	187	+17	56	315	2		
		7933	+61	195	+19	65	485	1		
		(5)		(134)	(−5)		2,157	13		
22	11 18	7939	−61	61	−15	67	291	4	F	Do.
		7939	−55	67	−14	56	242	2		
		7939	−54	68	−11	55	48	1		
		7939	−52	70	−14	53	485	1		
		7936	+40	162	+22	48	97	1		
		7935	+41	163	−18	43	73	1		
		7934	+59	181	+13	61	97	1		
		7933	+62	184	+17	67	339	1		
		7933	+71	193	+19	74	582	1		
		(5)		(122)	(−5)		2,254	13		
23	11 43	7939	−50	59	−17	52	97	2	G	Do.
		7939	−49	60	−16	50	145	4		
		7939	−43	66	−15	44	97	3		
		7939	−39	70	−14	40	485	1		
		7936	+53	162	+22	59	73	1		
		7935	+54	163	−18	55	36	2		
		7934	+71	180	+13	74	97	1		
		7933	+77	186	+15	79	242	2		
		(5)		(109)	(−5)		1,272	16		
24	11 20	7941	−68	28	+33	75	121	1	F	Do.
		7939	−37	59	−16	39	194	1		
		7939	−36	60	−17	38	48	1		
		7939	−29	67	−15	31	291	1		
		7939	−27	69	−15	30	436	1		
		7936	+65	161	+22	70	121	1		
		7935	+67	163	−17	68	24	2		
		(4)		(96)	(−5)		1,235	8		
25	10 53	7941	−56	27	+32	67	97	1	P	Do.
		7939	−25	58	−17	26	61	1		
		7939	−23	60	−16	25	145	5		
		7939	−17	66	−15	20	170	3		
		7939	−16	67	−15	18	436	1		
		7936	+78	161	+22	80	145	1		
		(3)		(83)	(−6)		1,054	12		

POSITIONS, AREAS, AND COUNTS OF SUNSPOTS FOR JANUARY 1946—Continued

Date	Eastern standard time	Mount Wilson group No.	Heliographic				Area of spot or group	Spot count	Plate quality	Observatory
			Difference in longitude	Longitude	Latitude	Distance from center of disk				
1946	h m									
Jan. 26	11 37	7941	−42	27	+32	57	48	1	F	U. S. Naval.
		7939	−12	57	−17	17	61	1		
		7939	−9	60	−16	14	61	4		
		7939	−6	63	−16	12	12	1		
		7939	−4	65	−16	11	48	4		
		7939	−3	66	−14	9	145	3		
		7939	−2	67	−14	8	436	1		
		(2)		(69)	(−6)		811	15		
27	11 14	7942	−75	342	−15	75	145	1	P	Do.
		7941	−30	27	+32	49	48	1		
		7939	+3	60	−17	12	97	7		
		7939	+10	67	−16	15	24	2		
		7939	+12	69	−15	15	485	1		
		(3)		(57)	(−6)		799	12		
28	11 31	7942	−70	333	−15	70	61	2	F	Do.
		7942	−65	338	−15	65	24	2		
		7942	−61	342	−15	61	97	1		
		7941	−17	26	+32	42	36	1		
		7939	+17	60	−17	21	97	10		
		7939	+25	68	−15	27	485	1		
		(3)		(43)	(−6)		800	17		
29	10 53	7943	−87	303	+25	88	533	1	G	Do.
		7943	−80	310	+22	82	24	1		
		7943	−79	311	+25	83	630	1		
		7942	−53	337	−16	53	73	9		
		7942	−48	342	−16	48	61	1		
		7941	−4	26	+32	39	24	1		
		7939	+31	61	−17	33	97	14		
		7939	+39	69	−15	40	485	1		
		(4)		(30)	(−6)		1,927	29		
30	12 50	7943	−86	290	+29	88	1,648	1	(†)	Mt. Wilson.
		7944	−82	294	−17	82	97	1		
		7943	−66	310	+27	75	1,357	4		
		7942	−36	340	−16	38	97	10		
		7941	+10	26	+32	40	12	1		
		7939	+52	68	−13	52	436	10		
		(*)	+70	86	+14	74	12	1		
		(6)		(16)	(−6)		3,659	28		
31	11 2	7943	−73	291	+29	80	3,491	10	G	Do.
		7944	−71	293	−16	71	145	7		
		7943	−55	309	+26	65	1,406	3		
		7942	−29	335	−17	31	97	16		
		7942	−23	341	−16	26	73	2		
		7945	+2	6	−20	15	36	11		
		7941	+22	26	+32	43	6	1		
		7939	+59	63	−17	59	388	3		
		7939	+66	70	−14	67	48	2		
		(6)		(4)	(−6)		5,690	55		

Mean daily area for 31 days = 1,231
Mean 10 g + s for 31 days = 61.9

*Not numbered.
†Data from Mount Wilson charts.
VG = very good; G = good; F = fair; P = poor.
g = number of groups; s = number of spots.

PROVISIONAL RELATIVE SUNSPOT NUMBERS FOR DECEMBER 1945

[Based on observations at Zurich except as indicated by an asterisk. Data furnished through the courtesy of Prof. W. Brunner, Swiss Federal Observatory, Zurich, Switzerland]

December 1945	Relative numbers	December 1945	Relative numbers	December 1945	Relative numbers
1	52	11	32	21	18
2	42	12	32	22	18
3	34	13	40	23	20
4	36	14	42	24	18
5	35	15	38	25	
6	30	16	34	26	18
7	23	17	46	27	21
8	30	18	42	28	19
9	16	19	35	29	13
10	30	20		30	15
				31	24

Mean, 29 days=29.4
Provisional mean for 1945=33.0

PROVISIONAL RELATIVE SUNSPOT NUMBERS FOR JANUARY 1946

January 1946	Relative numbers	January 1946	Relative numbers	January 1946	Relative numbers
1	25	11	35	21	58
2	35	12	21	22	44
3	34	13	73	23	48
4	24	14	103	24	59
5	18	15	109	25	
6	12	16	93	26	29
7	10	17	83	27	45
8	15	18	59	28	43
9	19	19	56	29	50
10	38	20	51	30	56
				31	83

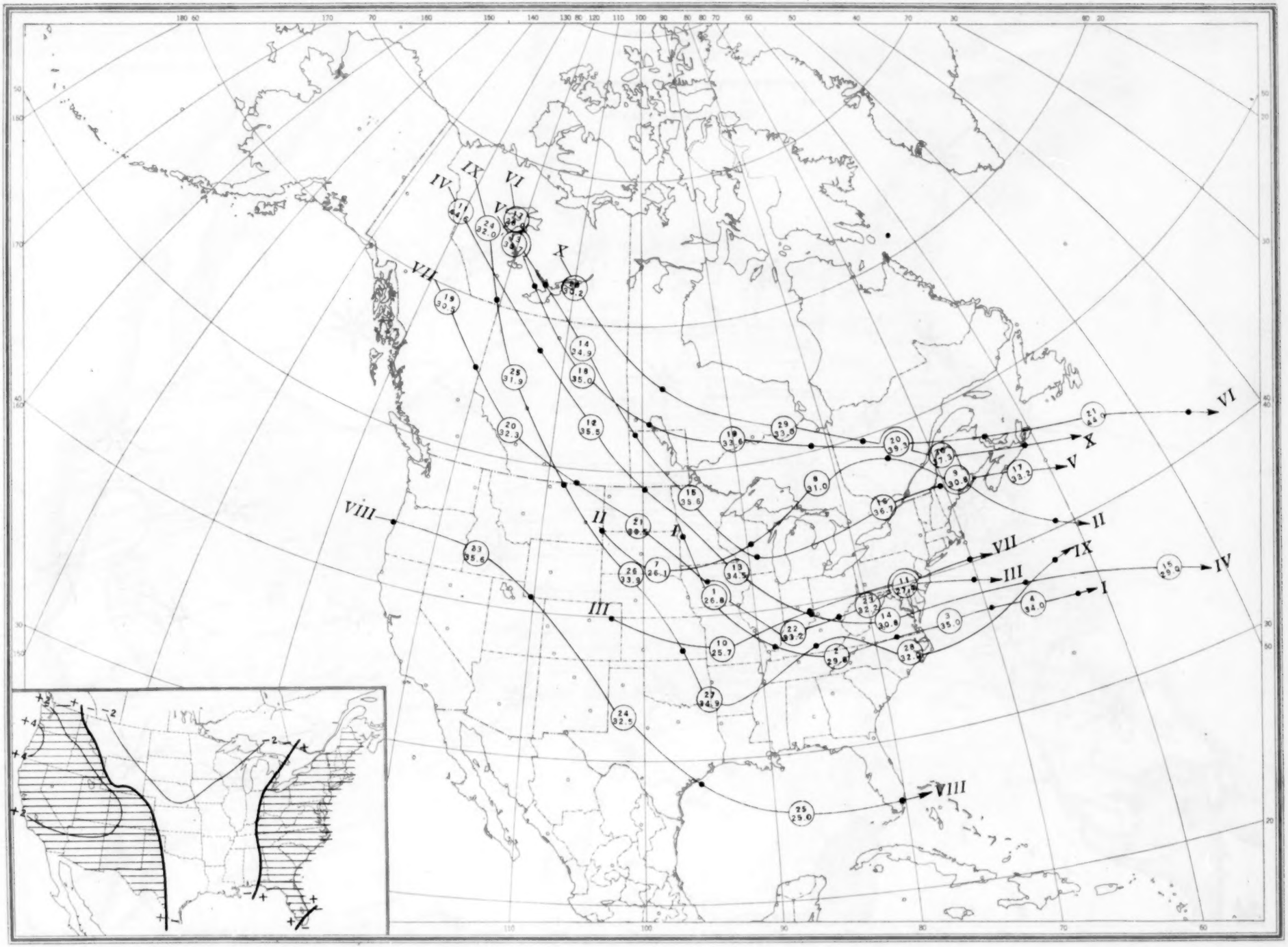
Mean, 30 days=47.6

Chart I. Departure (°F.) of the Mean Temperature from the Normal, and Wind Roses for Selected Stations, January 1946

Chart I. Departure (°F.) of the Mean Temperature from the Normal, and Wind Roses for Selected Stations, January 1946

HOURLY PERCENTAGES
100 50 50 100
Shaded portions show excess (+)
Unshaded portions show deficiency (−)
Lines show amount of excess or deficiency

Chart II. Tracks of Centers of Anticyclones, January 1946. (Inset) Departure of Monthly Mean Pressure from Normal

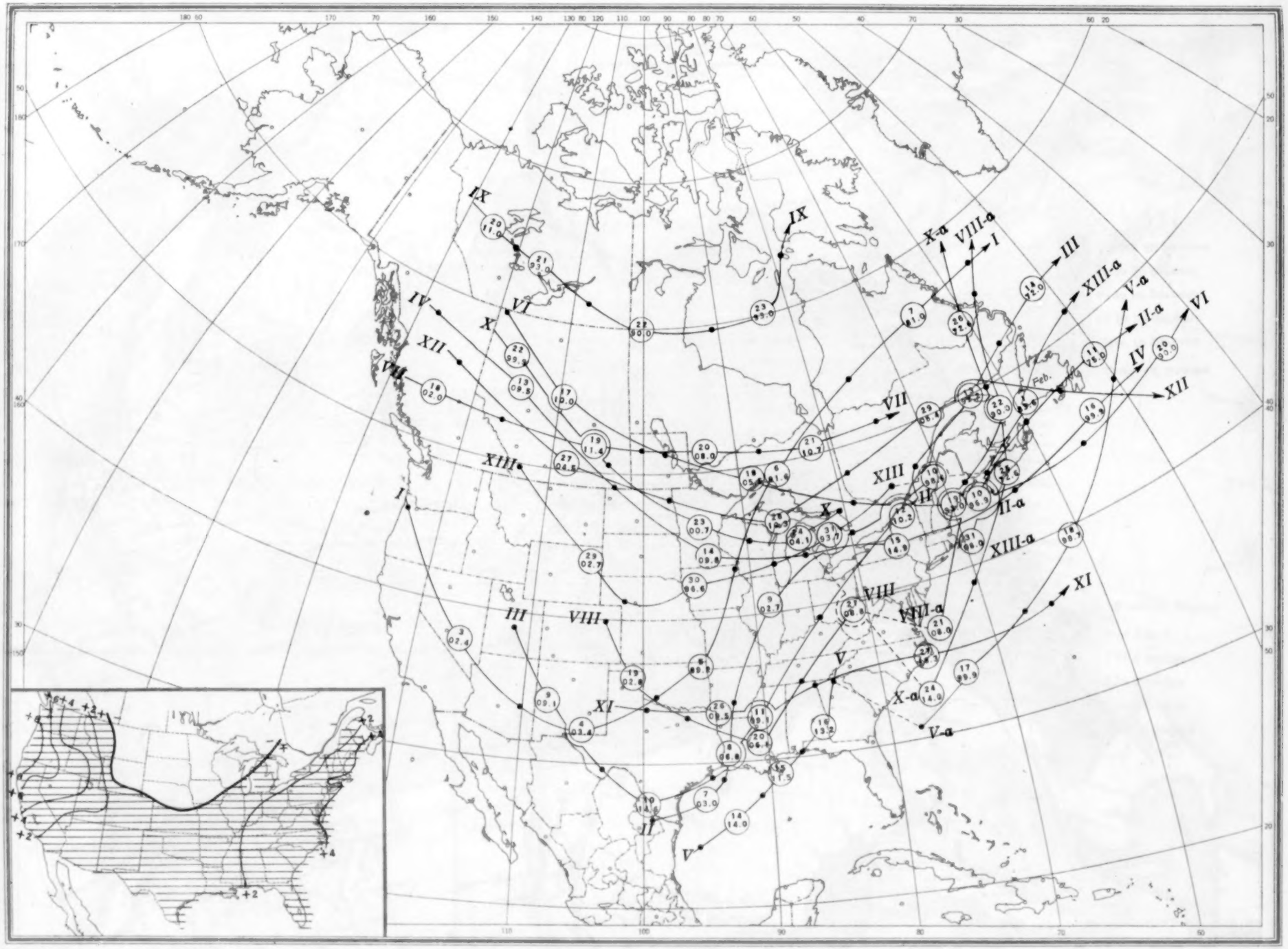


Circle indicates position of anticyclone at 7:30 a. m. (75th meridian time), with barometric reading. Dot indicates position of anticyclone at 7:30 p. m. (75th meridian time)

Chart III. Tracks of Centers of Cyclones, January 1946. (Inset) Change in Mean Pressure from Preceding Month

Circle indicates position of anticyclone at 7:30 a. m. (75th meridian time), with barometric reading. Dot indicates position of anticyclone at 7:30 p. m. (75th meridian time)

Chart III. Tracks of Centers of Cyclones, January 1946. (Inset) Change in Mean Pressure from Preceding Month



Circle indicates position of cyclone at 7:30 a. m. (75th meridian time), with barometric reading. Dot indicates position of cyclone at 7:30 p. m. (75th meridian time)

Chart IV. Percentage of Clear Sky Between Sunrise and Sunset, January 1946

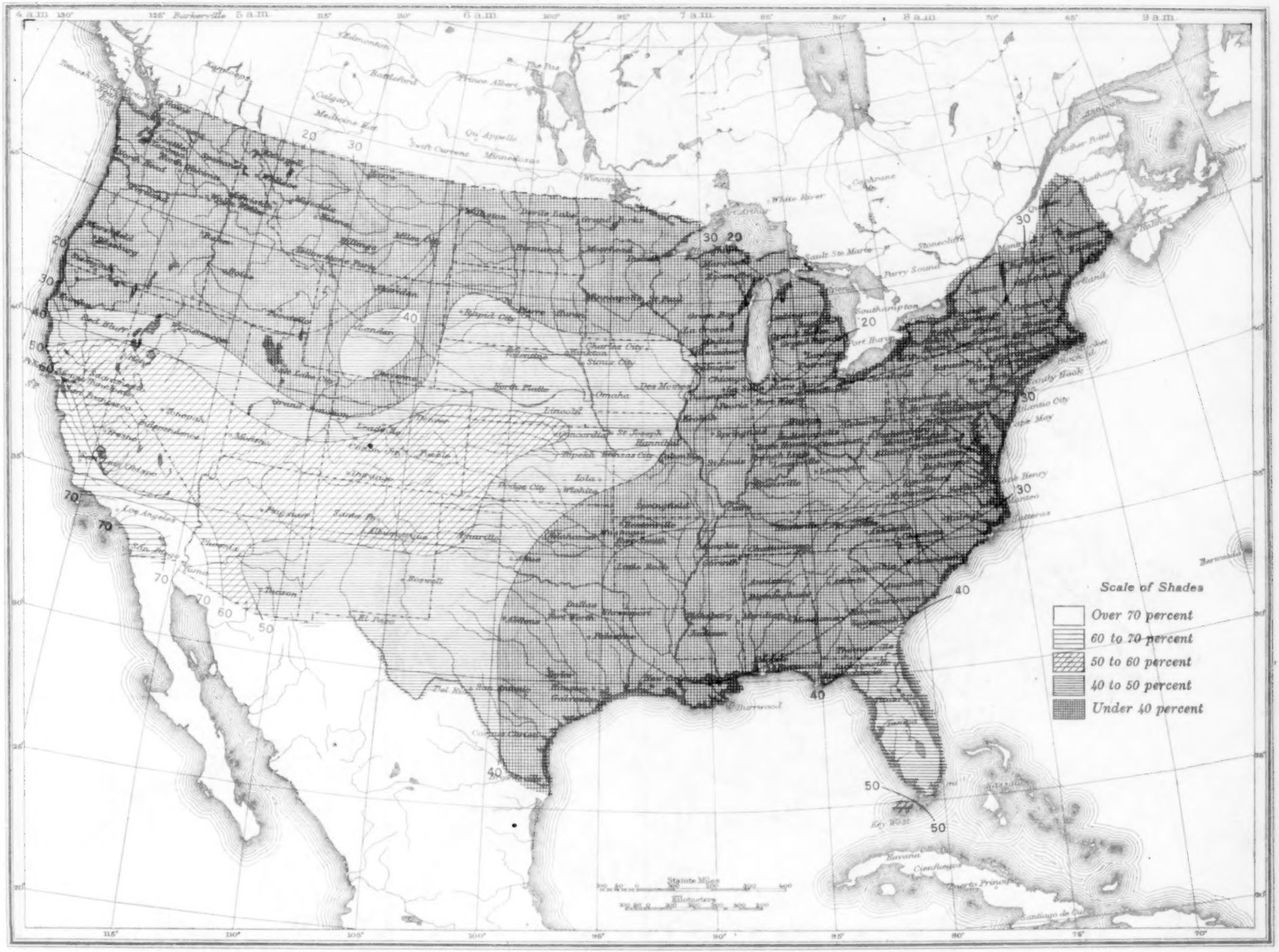


Chart V. Total Precipitation, Inches, January 1946. (Inset) Departure of Precipitation from Normal

Chart V. Total Precipitation, Inches, January 1946. (Inset) Departure of Precipitation from Normal

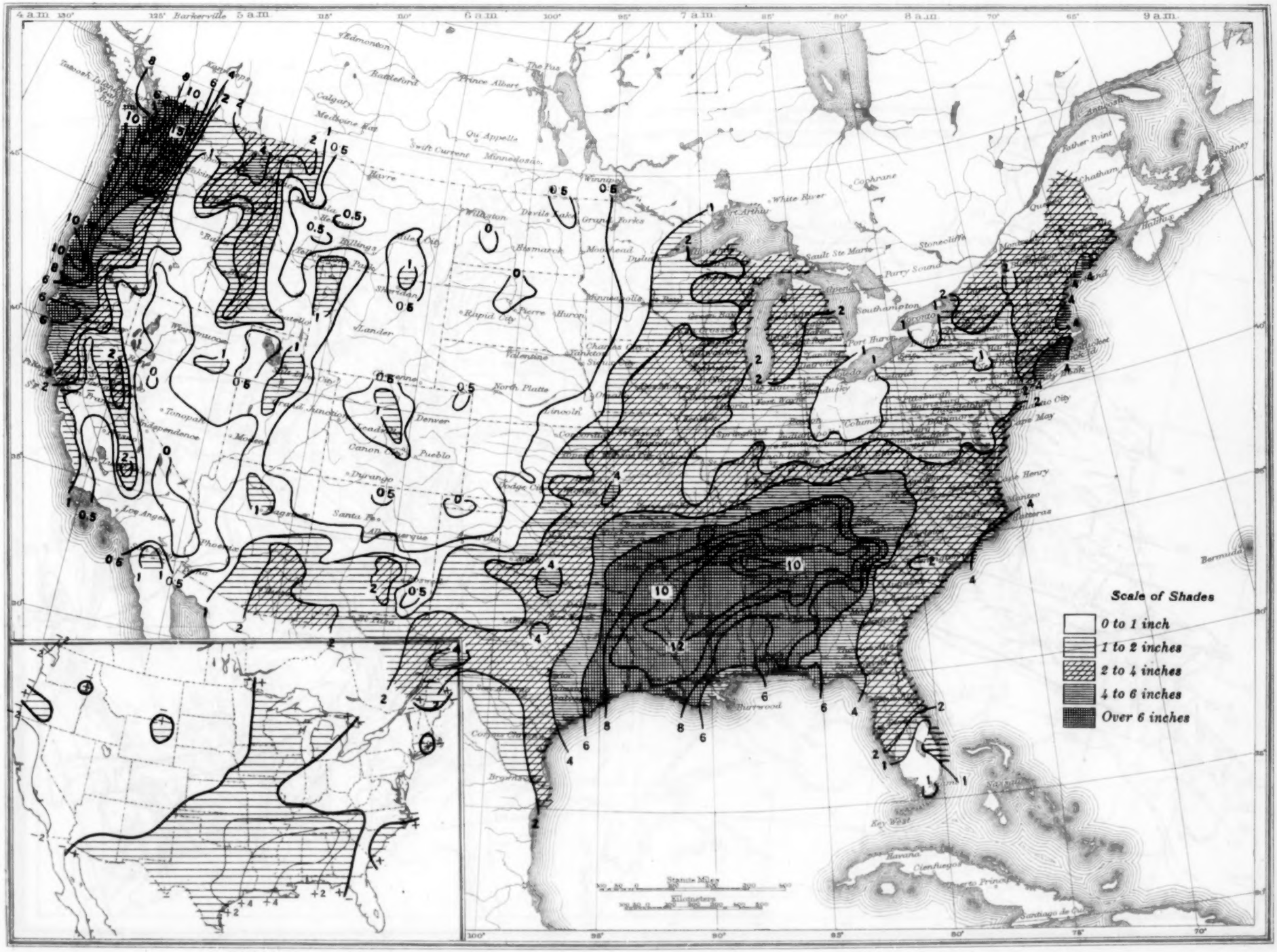


Chart VI. Isobars (mb), at Sea Level and Isotherms (°F.) at Surface; Prevailing Winds, January 1946

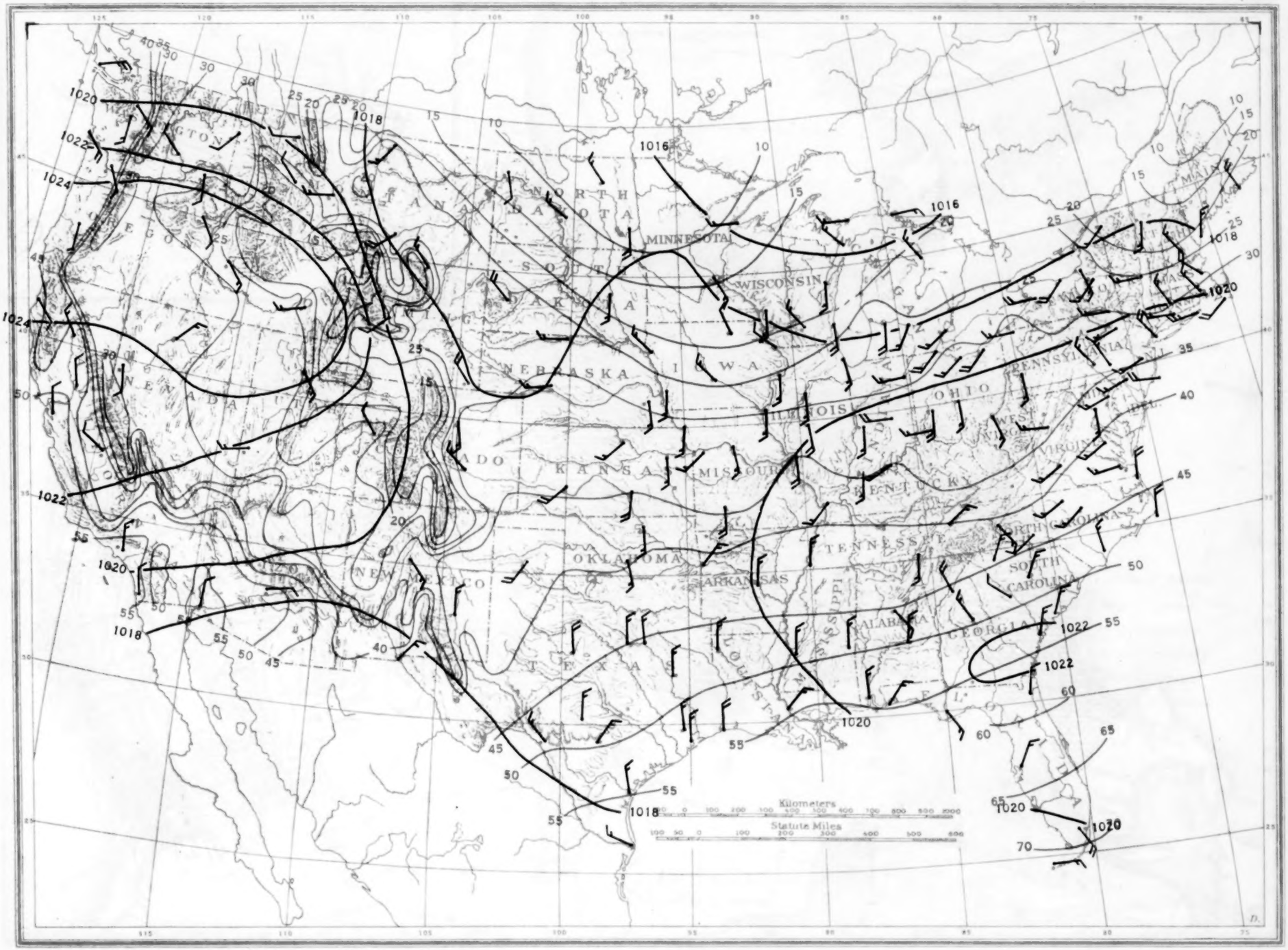


Chart VII. Total Snowfall, Inches, January 1946. (Inset) Depth of Snow on the Ground at 7:30 p. m., Monday, January 28, 1946

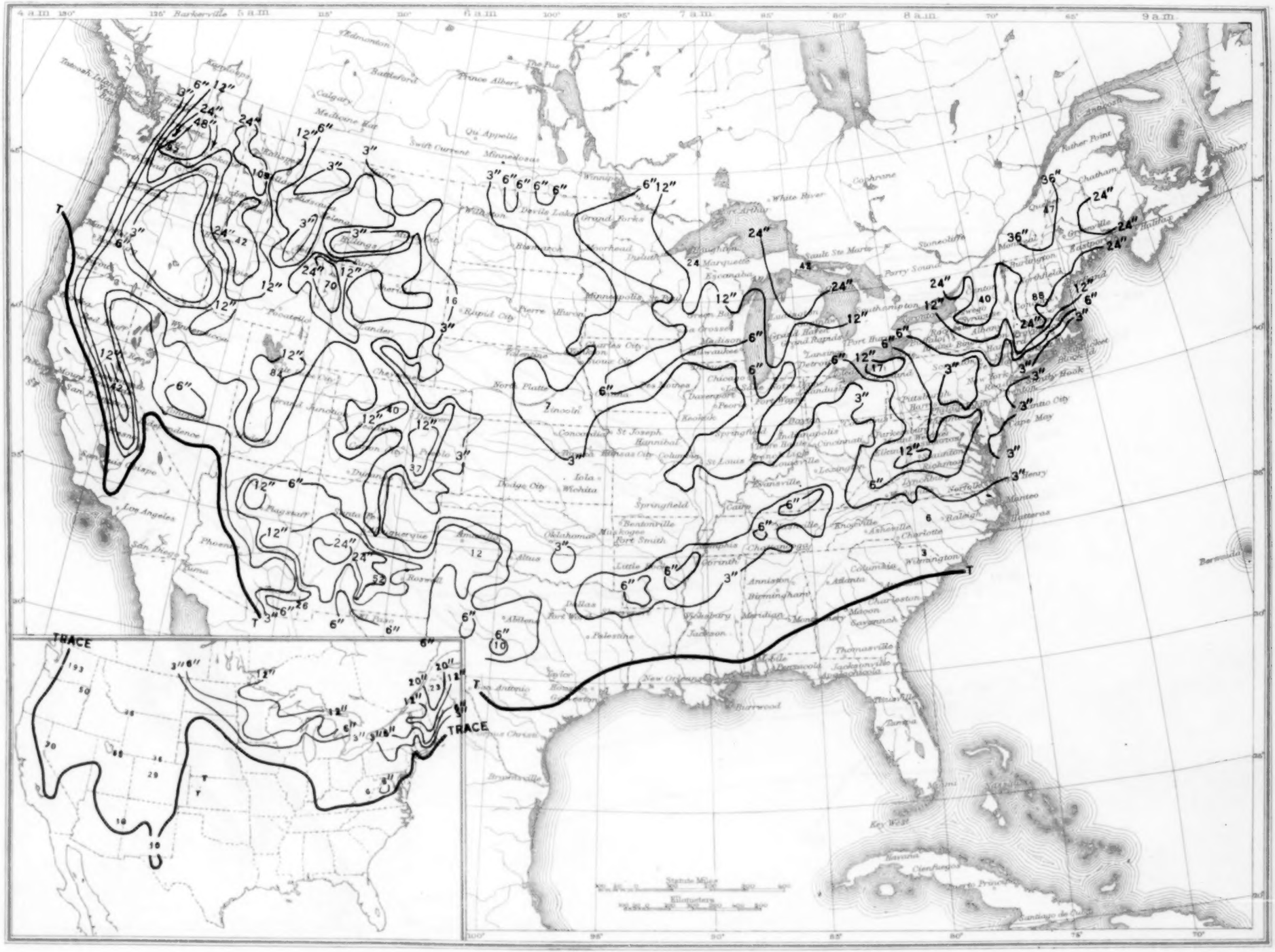
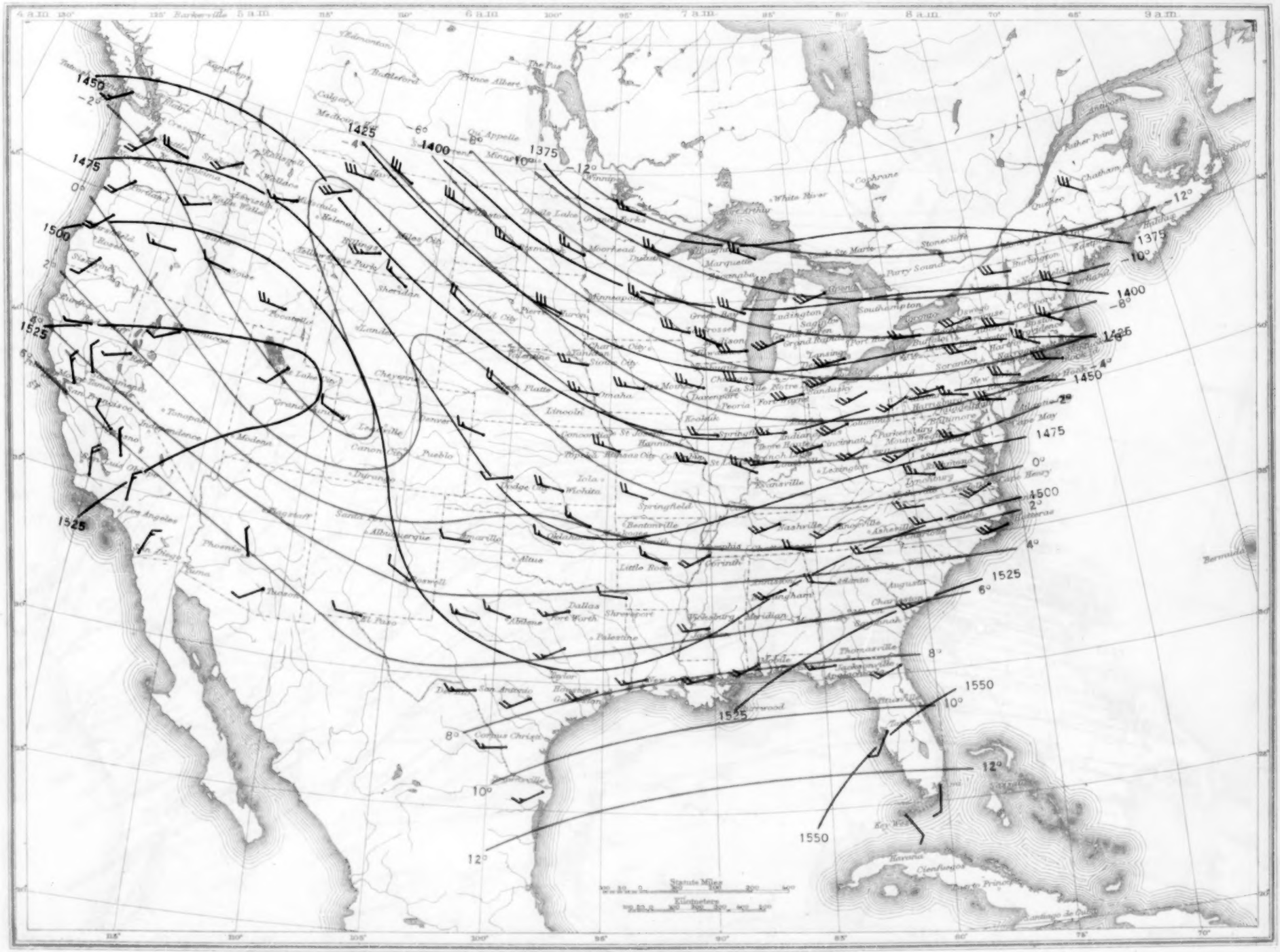


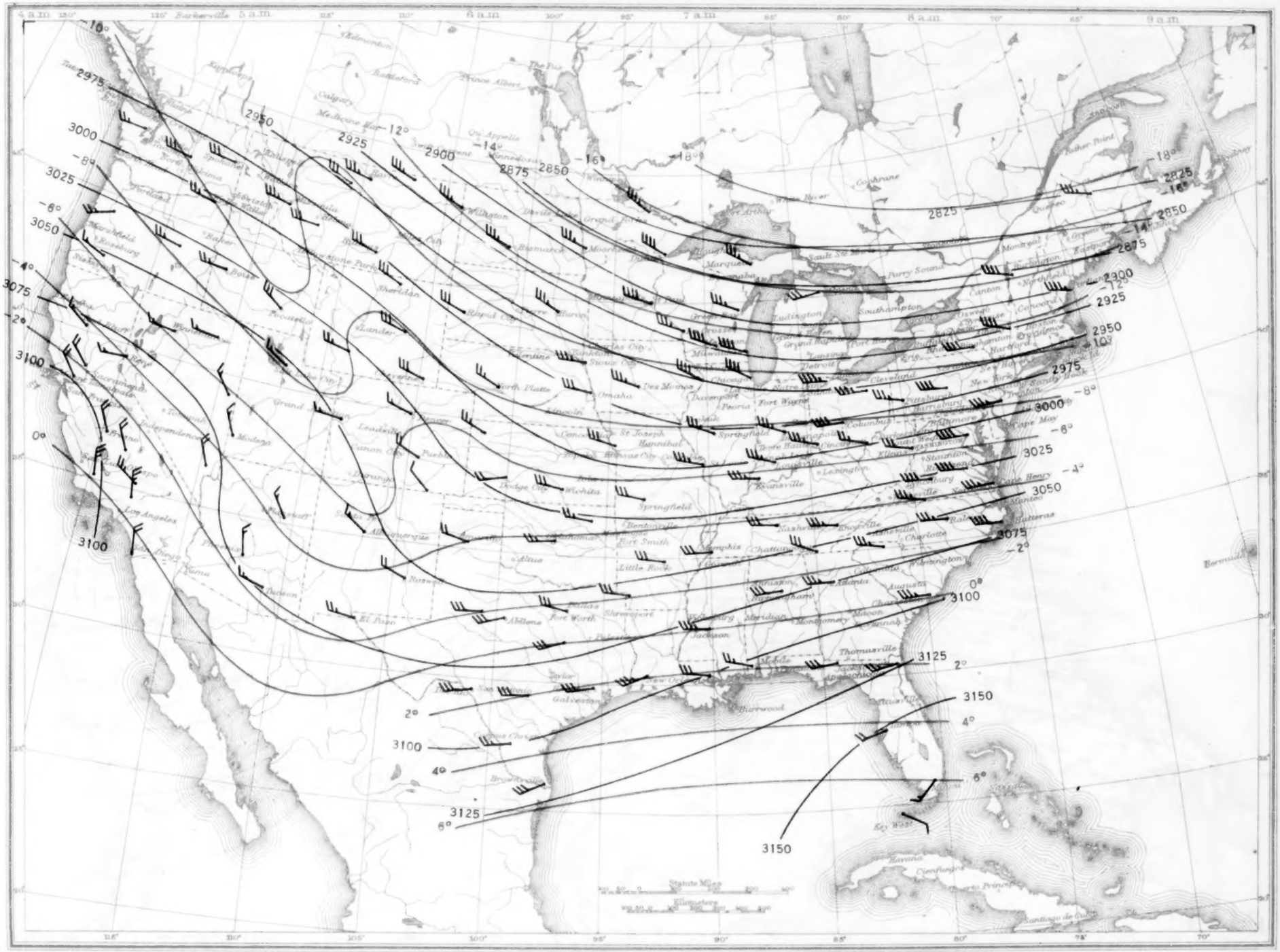
Chart VIII, January 1946. Contour Lines of Dynamic Height (Geopotential) in Units of 0.98 Dynamic Meter and Isotherms in

Chart VIII, January 1946. Contour Lines of Dynamic Height (Geopotential) in Units of 0.98 Dynamic Meter and Isotherms in Degrees Centigrade for the 850-millibar Pressure Surface, and Resultant Winds at 1,500 Meters (m.s.l.)



Contour lines and isotherms based on radiosonde observations at 0300 G.C.T. and winds based on pilot balloon observations at 1000 G.C.T.

Chart IX, January 1946. Contour Lines of Dynamic Height (Geopotential) in Units of 0.98 Dynamic Meter and Isotherms in Degrees Centigrade for the 700–millibar Pressure Surface, and Resultant Winds at 3,000 Meters (m.s.l.)

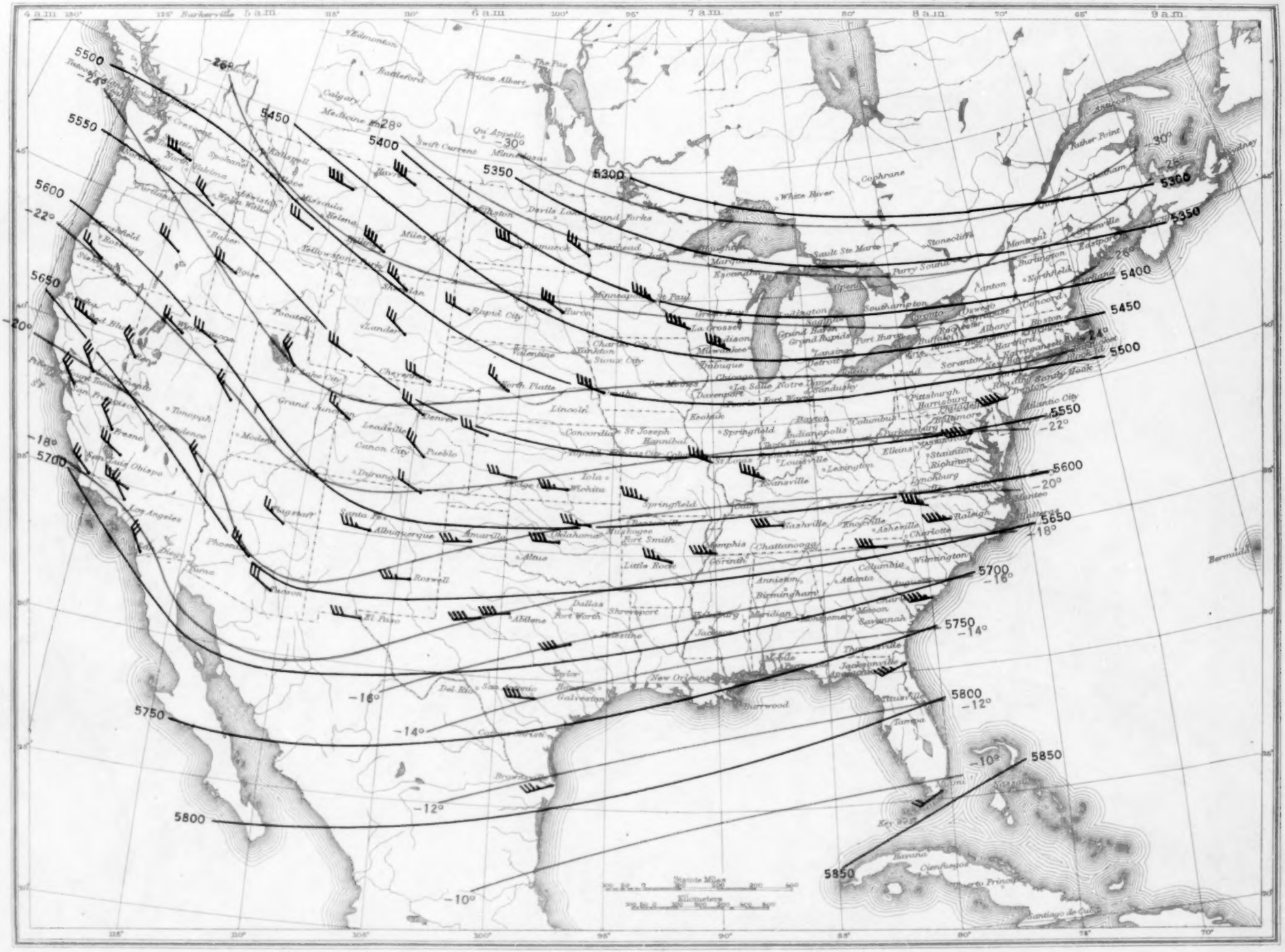


Contour lines and isotherms based on radiosonde observations at 0300 G.C.T. and winds based on pilot balloon observations at 1000 G.C.T.

Chart X, January 1946. Contour Lines of Dynamic Height (Geopotential) in Units of 0.98 Dynamic Meter and Isotherms in

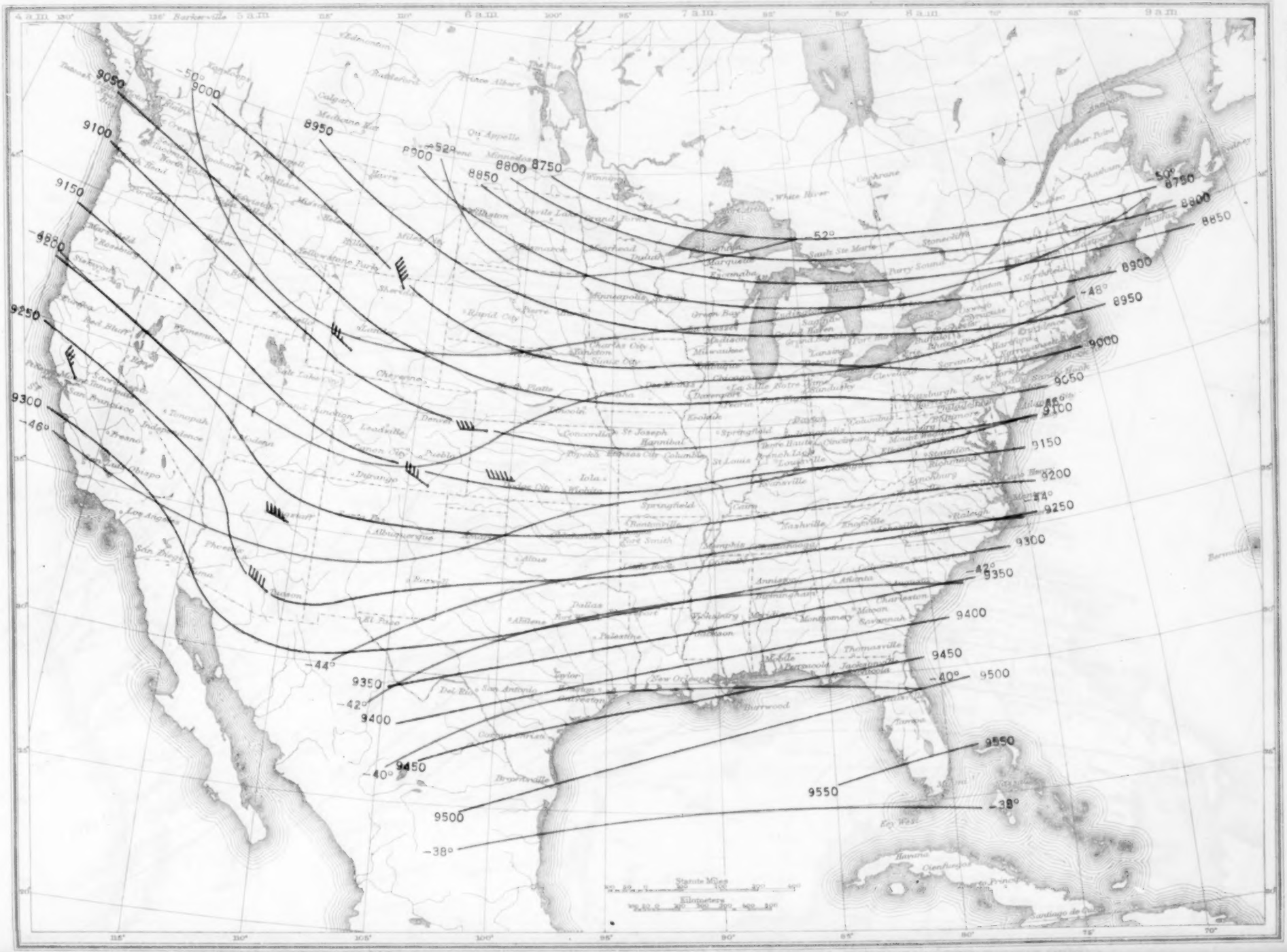
Contour lines and isotherms based on radiosonde observations at 0300 G.C.T. and winds based on pilot balloon observations at 1000 G.C.T.

Chart X, January 1946. Contour Lines of Dynamic Height (Geopotential) in Units of 0.98 Dynamic Meter and Isotherms in Degrees Centigrade for the 500-millibar Pressure Surface, and Resultant Winds at 5,000 Meters (m.s.l.)



Contour lines and isotherms based on radiosonde observations at 0300 G.C.T. and winds based on pilot balloon observations at 1000 G.C.T.

Chart XI, January 1946. Contour Lines of Dynamic Height (Geopotential(in Units of 0.98 Dynamic Meter and Isotherms in Degrees Centigrade for the 300–millibar Pressure Surface, and Resultant Winds at 10,000 Meters (m.s.l.)



Contour lines and isotherms based on radiosonde observations at 0300 G.C.T. and winds based on pilot balloon observations at 1000 G.C.T.